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INSECTIVOROUS BIRDS

OF

VICTORIA

WITH CHAPTERS ON BIRDS MORE OR LESS USEFUL

BY

ROBERT HALL

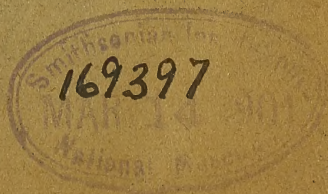
Author of "A Key to the Birds of Australia and Tasmania"

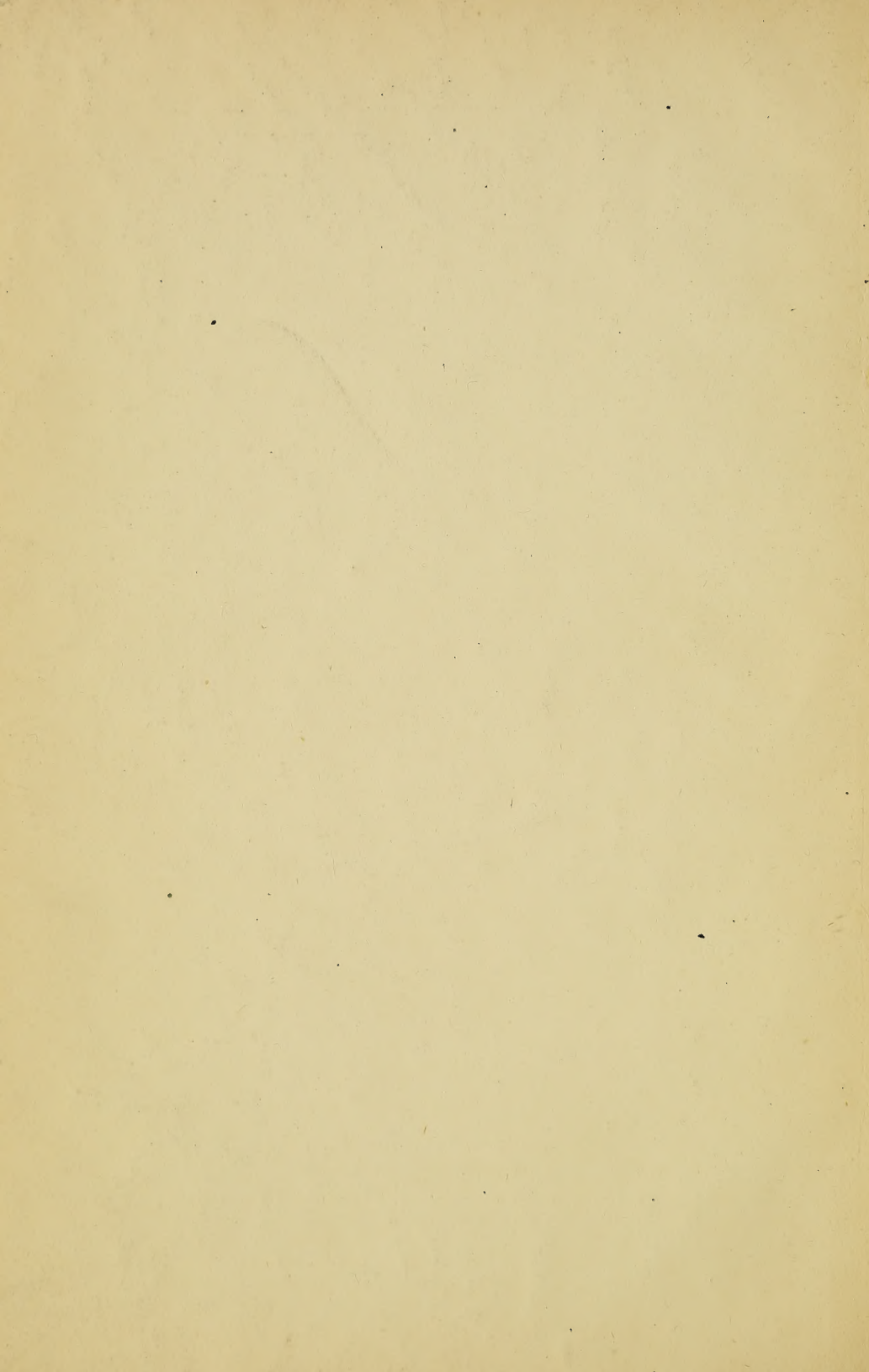
Melbourne

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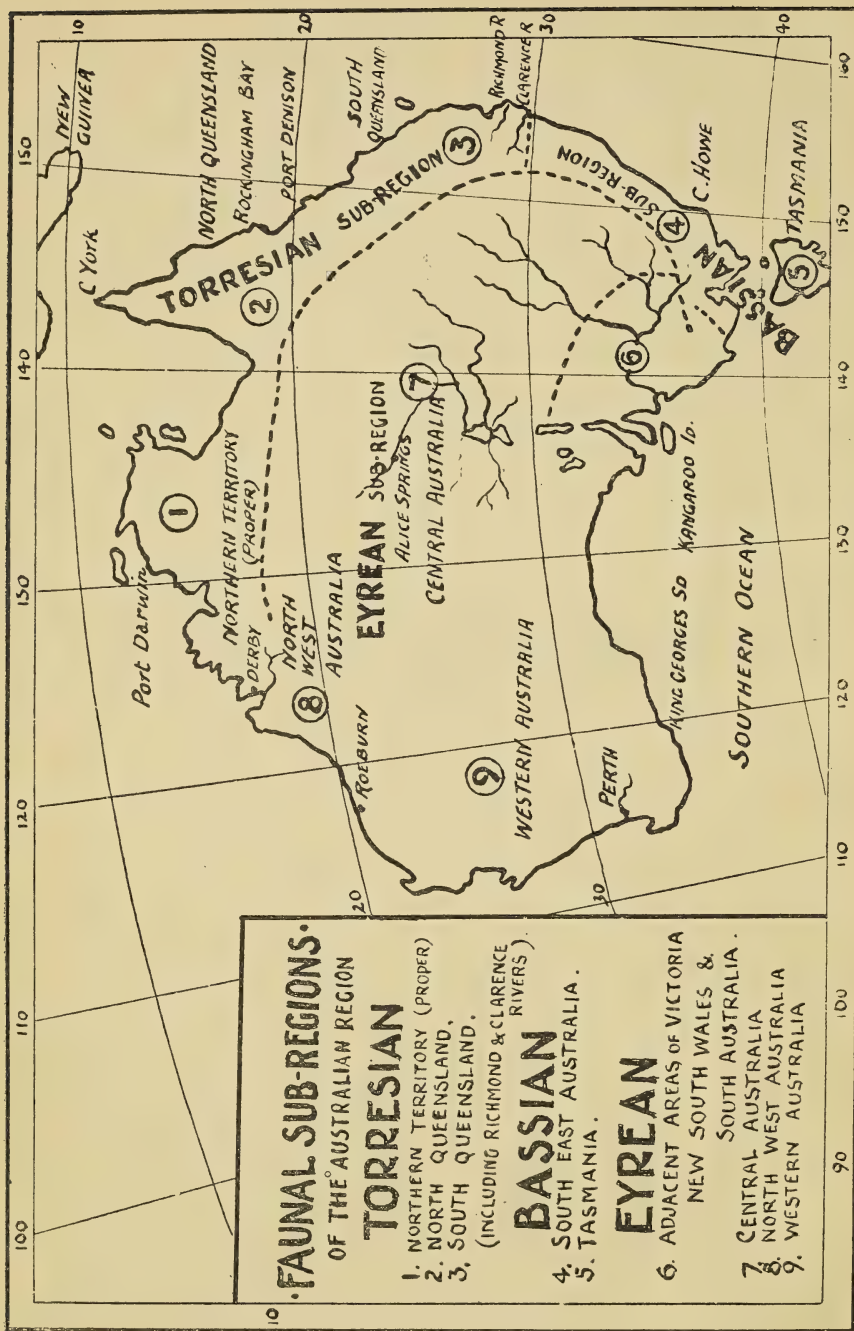
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THE INSECTIVOROUS BIRDS OF VICTORIA



FAUNAL SUB-REGIONS. OF THE AUSTRALIAN REGION

TORRESIAN

1. NORTHERN TERRITORY (PROPER)
2. NORTH QUEENSLAND.
3. SOUTH QUEENSLAND.

(INCLUDING RICHMOND & CLARENCE RIVERS)

BASSIAN

4. SOUTH EAST AUSTRALIA.
5. TASMANIA.

EYREAN

6. ADJACENT AREAS OF VICTORIA
NEW SOUTH WALES &
SOUTH AUSTRALIA.
7. CENTRAL AUSTRALIA
8. NORTH WEST AUSTRALIA
9. WESTERN AUSTRALIA

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OF
VICTORIA

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Author of "A Key to the Birds of Australia and Tasmania"

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1900

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INTRODUCTION.

THE purpose of this handbook is to foster an interest in the insectivorous birds of our colony, and to aid in the protection of them. To attain that end the subject has been fashioned in a manner which I trust will appear homely. Foreign words have been rendered simple, and no special scientific arrangement has been adopted. The diversity of the diet of our birds has induced me to place them under separate heads, and a short account of their habits, food, nest, eggs, and geographical distribution in Australia and Tasmania has been given. In certain cases, as the Swift, Roller, Grass-Warbler, Halcyon, Merops, Black Fan-tail, and Cuckoo-Shrikes, the birds also appear further north, but nearly all belong to the Australian sub-region. The numerals under geographical distribution are explained in the reference map, and the areas adopted are based upon Professor Spencer's scheme of faunal sub-regions of the Australian region. This will show over what portions of the continent our birds are to be found. A plate of a bird is given, to show the more important external characters used in the description of a species; and to recognize them in the field, and the economic value of the bird, a pair of field-glasses will be found to be invaluable. On a special page are provided cross references to the valuable charts of the insectivorous birds of Victoria and their eggs, to be issued at an early date by the Education Department, Victoria.

This will enable our young people to associate promptly various parts in the life-history of each bird. In addition, sixty plates are reproduced, slightly more than half of which are from John Gould's "Birds of Australia," and, unless stated to the contrary, the remaining subjects are provided by the author's camera. The woodcuts are from cabinet specimens. Those who desire to know more of the closely allied forms than is here mentioned could consult with advantage the "Catalogue of the Birds in the British Museum," Gould's work, or the "Key to the Birds of Australia and Tasmania." I have quoted freely from papers contributed by myself to science associations, more especially to the proceedings of the Field Naturalists' Club of Victoria; and I am pleased to express, because of kindly interest shown, my indebtedness to Charles A. Topp, Esq., M.A., LL.B., a late president of the association named. As no work dealing with the useful birds of our colony has been previously issued, I trust this one will prove of service to the fruit-grower, the agriculturist, and the naturalist.

R. H.

PART I.

BIRDS EXCLUSIVELY INSECTIVOROUS OR MOSTLY SO.

THE position of nearly all the birds arranged under this head is that of Passeres, or Perchers, and a review of the habits of our birds will show that the Passeres, if not altogether insectivorous, are very much so. It has been necessary, however, to exclude a certain number that are for the most part frugivorous, or else have proved themselves troublesome in summer. These are noticed in subsequent parts. In my correspondence bearing on this subject I have often urged those people with country occupations to foster the healthy pursuit of bird-study, with the hope that we might all be benefited by their observations in the field. One of the replies seems to me to be characteristic:—"From my point of view the study of small birds is profitable as well as healthy, for we would be actually starved off the land if it were not for our bird friends, both large and small. As much as possible I leave cover to protect and preserve them. In the damp parts of Victoria ground vermin is so numerous and prolific that our regard for the birds is by no means a sentimental one."

It is quite patent to you all that the class of country in which each of you is situated need not be moist to harbour more pests than are good for the new conditions of cultivation. I trust, therefore, you will afford all the protection in your power to the birds that are insectivorous or mostly so.



WHITE-BACKED MAGPIE

(WHITE-BACKED CROW-SHRIKE),

Gymnorhina leuconota, Gld.

Jim-nō-rī'nä lū-ko-nō'ta.

Gumnos, naked ; *rhinus*, nostril ; *leukos*, white ; *noton*, back.

GYMNORHINA LEUCONOTA, Gould, "Birds of Australia," fol.,
vol. ii., pl. 47.

GEOGRAPHICAL DISTRIBUTION.—Areas 4, 6.

KEY TO THE SPECIES.—*Adult male*—Whole of back pure white, like neck and rump ; throat and breast black ; bill pointed and slightly hooked ; nostrils bare of feathers, and placed about the middle of the bill (longitudinal slit).

Adult female—Similar to the male ; back not so white.

Young—Whole of back clouded with grey.

UNDER the sub-family Gymnorhinæ of the Laniidæ or "Crow-Shrikes" there are thirteen species recorded for Australia and Tasmania. Of these only four belong to the genus *Gymnorhina*—one of which, *G. hyperleuca*, occurs in Tasmania ; a second, *G. dorsalis*, in Western Australia ; while the remaining two, our common magpies, are to be found widely distributed over the Australian continent. It is with these two—the Black-backed (*G. tibicen*) and the White-backed (*G. leuconota*)—Victoria is concerned. Though it may seem strange, the former keeps principally to the north of the Dividing Range, and the latter to the south. Magpies are not always gregarious. They mate for life, and families of two to five are generally to be seen as if governing each a small area. Sometimes a pair, or the occupiers of a block, will not breed for a year, but they join

the multitude in the following summer. Though magpies are fond of wheat, they are trebly drawn to the luscious grasshopper, a horde of which they will attack in a most beneficial way for the agriculturist. The season 1897-8 was so poor in insect life that young magpies died in their nests in different parts of the Wimmera. Just as spring seems to come first to the plants near sea levels and later to the "alpine" forms, so does this species build a nest earlier in the valleys than on the hills. This seems to me to be true as regards the small difference of, say, 300 feet.

In my notes on magpies I find the young birds have as much wish to stay with the parents throughout the spring as young albatrosses have, but it is not allowable in the former case. The keen observations of Mr. Geo. Graham, recorded in his letters to me of August, 1898, state clearly (with small additions by the writer) the case of forced individual migration. "Three out of seven families that occupy my paddocks have with them each a bird of last season's breeding, and to all appearance it intends to stay with them throughout the summer. When the next brood is incubated the family will increase from three to five (two always being the number of the brood here—Heytesbury), and, providing there are no accidents, it remains until about next May, when one disappears, and shortly after another goes. At this time there is a deal of chasing among the magpies, and I have concluded that it is the young male that is being driven away. The young male becomes blacker and darkens sooner than the female, as well as I can judge. I think the parent male would not permit the opposite sexed young also to remain in camp during spring, so the junior male has to go. If the young male should be allowed to remain with the parents into the next season it does not mate during its first year. I have also noticed

the adult females of two families trying to drive away the young females by repeated attacks of sometimes thirty minutes' duration. The old bird would pin the young one to the ground, but it seemed to have no other effect than to make the young one afraid of its mother. The male parent stands by, looking on, and takes no active physical part in the contest. In both cases the youngsters stood the ill-treatment till the duty of nest-building compelled the dame to leave them in possession. After the young of the new brood are hatched out it is amusing to see the dejected attitude of the oldest daughter (unmarried) when the mother happens to approach it in quest of food for the new brood. In May or June following it disappears, and probably begins housekeeping on its own account. Just at this time a new patch of forest has been opened up, and, if only of a few acres, a pair of magpies will find their way into it. But all is not complete yet, as someone has shot the male because it thrashed his domestic fowls. The female cleared out at once, and returned in a few days with four males, the strongest and best fighter eventually becoming her mate." It is interesting to direct a field-glass on a parent bird with a nest of young. You can see it fill the mouth with insects almost to bill-overflowing, then fly into the nest and equally distribute the collection to the young. I think young magpies must be trained to catch snakes, and that it is not an intuition with them. Proof to this effect is not strong, but a bird I know in domestication almost went into hysterics one day when an unassuming lady visitor came in with a boa dangling from her neck. The bird got a terrific fright, screeched, and hid itself for nearly three hours.

My friend, Mr. W. J. Stephen, has a female bird, taken from a nest four years ago, which is a splendid talker. In

the spring of 1897 an inclination to sit was observed. The following year (August, as with wild birds) it showed a similar desire, and some assistance was given as soon as it showed itself in earnest. Both Mr. and Mrs. Stephen were good enough to keep a rough diary for me of the nest-building, which shows how the bird, in spite of being turned out of its chosen spot several times, persisted in building a nest, using for preference pieces of wire, stiff twigs, and also some strips of stiff white calico, but rejecting pink flannelette.

At Box Hill there is a semi-domesticated pair of birds that have lived and reared their young in a garden for five consecutive years. They added to and renovated their first nest up to the third year, and built another for the fourth year. This I know by the broken leg the male bird has had from the beginning of 1893. A pair of this species living at Pakenham has reared three families of young without any black pigment in their plumage, but these albinos do not seem to live long in captivity.

Nest.—Cup-shaped; large; formed of sticks externally, grasses and hair internally, and nicely lined; placed high or low according to the size of tree available.

Eggs.—They vary considerably in colour. The ground colour may be light green, light brown, or intermediate shades; the markings may be streaks and blotches of chestnut, reddish-brown, or varying brown; some will be heavily blotched, others will be lightly so. Clutch, 3 to 4. Length, 1.5 inches; breadth, 1 inch.

BLACK-BACKED MAGPIE

(PIPING CROW-SHRIKE),

Gymnorhina tibicen, Lath.*Jim-nō-rī'-nä ti-bī'-sen.**Gumnos*, naked; *rhinus*, nostril; *tibia*, flute; *canere*, to chant.GYMNORHINA TIBICEN, Gould, "Birds of Australia," fol., vol. ii.,
pl. 46.

GEOGRAPHICAL DISTRIBUTION.—Areas 3, 6, 7.

KEY TO THE SPECIES.—Black band across white back; throat and breast black; bill pointed and slightly hooked; nostrils bare of feathers, and placed as longitudinal slits about the middle of the bill.

DURING certain times, as when the seed grain is in the ground, the "'pies" are not in favour with every cereal grower. That it destroys the prospect of a crop at such time is not real to me, although the evidence of a stomach full of grain certainly weighs against its good name. Soft-bodied injurious vermin are very much reduced in number at the same time.

For eleven months of the year the bird is indispensable to the grower, doing what other birds never do, and eventually adding its quota to the handsome results the quality of the ground, with a minimum of pests, has given. But for the magpies the cleaning of our grounds would periodically cost us heavy sums, and like the "whin," when let alone for years, it would rather shock us when the evil day could no longer be staved off.

Something of this handsome bird might be said with advantage in a homely way. It appears that in captivity magpies show an aversion to anyone who has annoyed them, as well as to anyone who looks like the person who

has annoyed them. The voice of the offending person is quite sufficient to startle the bird and make it rush "post haste" to the gate to waylay or torment the arriving juvenile or lady. Although it is principally children and ladies that they have a grievance against, some children and ladies



Fig. 1. Black-backed Magpie and Nest. One-fifth natural size.

pass by as very good friends. No stones are picked up by the bird as if to throw and injure. One magpie known to myself, upon hearing an enemy's voice will invariably rush to the gate, pick up a stone, and try to get through the pickets with the stone in its beak. Under domestication

a magpie can be very pugnacious, according to the provocation given that leads all mankind to be treated alike. Magpies fly at you for a reason similar to that of a hen with its chicks in danger. The male bird, and not the female, appears to be the attacker of man, and the attacked is not only a man, woman, or child, but may be a dog or a species of small bird, or, as is better known, a hawk or crow. Small birds, as Robins and *Acanthizæ*, that are breeding at the same time as the magpie, may have their nests pulled to pieces, the young destroyed, or even the old birds, if they can be caught. It is in this respect a brutal bird. Both male and female attack hawks. The magpies fly desperately at you when either eggs or young are in the nest, as well as when the latter have recently left the nest, but later their pugnacity ceases. In individual cases the magpie will keep the pugnacious temperament very strongly for some weeks, or even months, and woe betide you if you should meet such a hot-tempered bird. In breeding season it recognizes its arch-enemy, man, whether on horseback or in the buggy, and far beyond a quarter of a mile from its nest it will follow him and endeavour to make war on him. The Black-breasted Plover will fly at dogs, for protection of its eggs, just as the magpie will fly at a crow for a like reason. I should say the bird has learnt by direct experience (not instinct) to regard mankind in the light of an enemy; experience, because in the remote and sparsely populated districts, where the birds are not subject to the persecutions of schoolboys or other egg-hunters, they are of a much milder disposition. As we approach the towns their ferocity increases.

In the mallee country Mr. Goudie has noted and communicated to me that a person going near the nest of a

magpie is not attacked as he would be in the case of a nest nearer the coast, even when the mallee nest contains young. I have climbed to examine nests in this latter part, and although they contained young the old birds flew straight away to watch from a distance, offering no resistance whatever. When I was a schoolboy I made a visit to Point Cook with a companion, and we took fifteen young magpies from five nests. In no one case did the parents fly at us, although it was a pity they did not do so. Because the country was closed to everyone without a permit to traverse it the magpies were very trustful.

I know of a Black-backed Magpie at Hawthorn which has built a nest in a peach tree. For the past three years it has been living under the domesticated *rôle*. The bird, not having full freedom, could only work at the nest between 7 and 9 a.m. and after 5 p.m. and on the whole of Saturday and Sunday. The nest was placed 7 feet 6 inches above the ground. It was compact, neatly made of various twigs, and slightly lined with feathers. The whole breadth was 14 inches, that of bowl 4·5 inches, and depth of cavity 2·5 inches. In October three eggs were laid in it, and the dimensions averaged—diameter, 1·08; axis, 1·5 inches. The colours were also normal—ground bluish-grey, under markings purplish, over markings dark brown.

It is rarely that either of these species lays five eggs to the clutch, but cases in both were reported to me in 1897.

Mr. H. S. Burcher, of Mossgiel, N.S.W., on 15th September, 1898, writes to me:—"I noticed a very remarkable incident last week in the finding of a Black-backed Magpie's nest with five eggs. This is quite out of the ordinary for a magpie here, as it is the first time I have ever found five eggs in a nest. I left them at the first time

to make the note you wrote for, when on passing the second time I found, to my surprise, the five eggs had gone, although the birds were still there. Noticing the inside of the nest was not so deep as before, I pushed my hand further down and felt the five eggs. It seems that they had built a thin lining over the eggs, which I first thought was to hide them away, but I found out after they had made a partial new nest on top of the other and laid another clutch. The first set of eggs was poorly developed, and fairly easily blown. Between the laying of the two sets of eggs there was an interval of some fourteen days, including the time occupied in depositing the second clutch."

Nest.—Similar in every way to the previous species. Both are placed in the forks of perpendicular branches.

Eggs.—The specimens taken from five different nests show very varying differences. The ground colour will be pale green or brown. The spots may be lilac or chestnut, and the streaks of the same. Clutch, 3. Length, 1·5 inches; breadth, 1·1 inches.

MAGPIE-LARK

(MUD-LARK, PE-WIT),

***Grallina picata*, Lath.**

Gra-lī'na pik'-a-ta.

Grallæ, stilts ; *pica*, a magpie.

GRALLINA AUSTRALIS, Gould, "Birds of Australia," fol., vol. ii.,
pl. 54.

GEOGRAPHICAL DISTRIBUTION.—Areas 1 to 9 inclusive ; accidental
in 5.

KEY TO THE SPECIES.—Breast black ; under parts pure white ;
throat white in female, black in male ; upper surface black ;
bill broader than it is high ; second primary longer than the
secondaries.

It is a useful species, very broadly distributed. Fruit-growers and market gardeners around Melbourne in 1896 received a very nice visit in force from this species. For seasons previous and since it has visited us only in pairs, and then few and far between. They came just before the Wood-Swallows retired, and what the latter left the former have been attentive to, preferring those kinds of creeping things that are found in damp places. This so-called Mud-Lark is greatly the life of the place, its "pe-wit" always announcing its approach when on the wing. The charm of the bird is best exhibited when gracefully walking by the green banks of the creeks or shallow ponds, but the faery form peculiar to it is lost as the gentle creature leaves the earth for higher fields, when its flap and heavy flight are totally different to what one would expect from its manners upon the moist ground, where its black and white plumage affords a most agreeable contrast. Water in creeks and pools generally harbours "snails," and where the latter are very often they prove the hosts of

sheep "flake." This bird, in common with the White-fronted Heron (Blue Crane), makes war upon the mollusc hosts, and thus considerably reduces the danger and loss, especially to our western graziers.

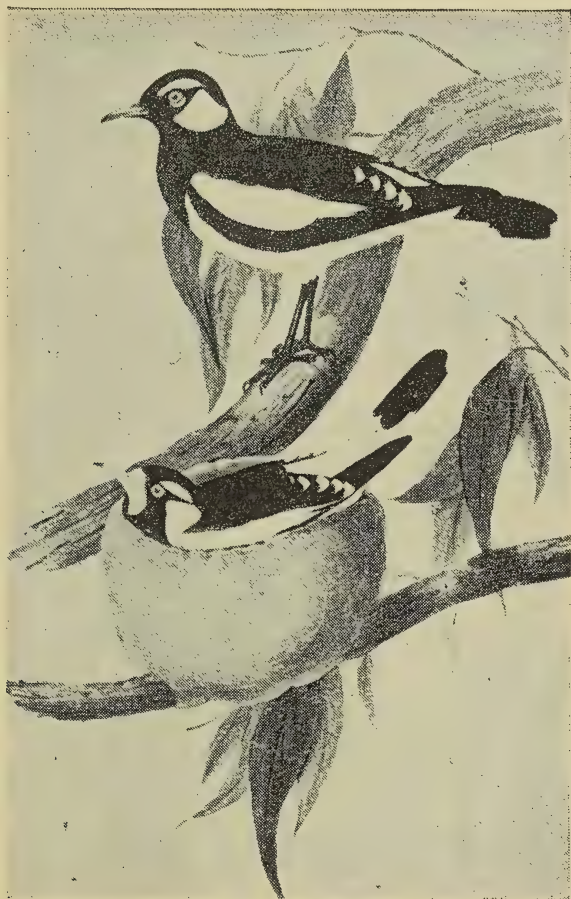


Fig 2. Magpie-Lark, male and female. One-fifth natural size.

Nest.—Cup-shaped ; made of mud, and lined internally with grasses ; placed near water and generally in a eucalypt on a horizontal bough.

Eggs.—Two, three, or four to a sitting. One set may be rich reddish-brown, with markings of a stronger colour ; a second set may be nearly white, with brown spots upon it, varying between olive and nutty brown. Length, 0·8 inch ; breadth, 0·6 inch.

HOUSE-SWALLOW

(WELCOME SWALLOW),

Hirundo neoxena, Gld.

Hi-run'dō nē-ō-zē'nä.

Hirundo, a swallow ; *neos*, new ; *zenos*, strange.

HIRUNDO NEOXENA, Gld., "Birds of Australia," fol., vol. ii., pl. 13.

GEOGRAPHICAL DISTRIBUTION.—Areas 2, 3, 4, 5, 6, 7, 9.

KEY TO THE SPECIES.—Tail forked ; throat rust-red ; abdomen white ; ear coverts glossy blue, like back ; nostrils lateral.

THIS beautiful creature of the air was quite content, on account of the moderately mild season, in 1896, to stay in Victoria. In March the birds assembled in hundreds in Elizabeth-street, Melbourne, and I was inclined to conclude one contingent was preparing to make a journey. These birds settled on the projecting mouldings of the third floor of a five-storied building, each uttering a single note, which collectively constituted a din of weak voices. Mr. Frank Tate, M.A., has told me of a flock of several hundreds entering a school building near Kerang, which he believes to have been the arrival of the flock in their return migratory journey. It is well for agriculturists in the district that this flock kept the even tenor of its way. In March there are three features observable about these birds. At first, that they are combative. One pair for several

minutes fought while on the wing; having ascended to a high altitude a downward chase followed, when they appeared as comet-like objects floating rapidly through the air, chattering all the time. Secondly, that the male is a vocalist with a considerable amount of ability, for if the

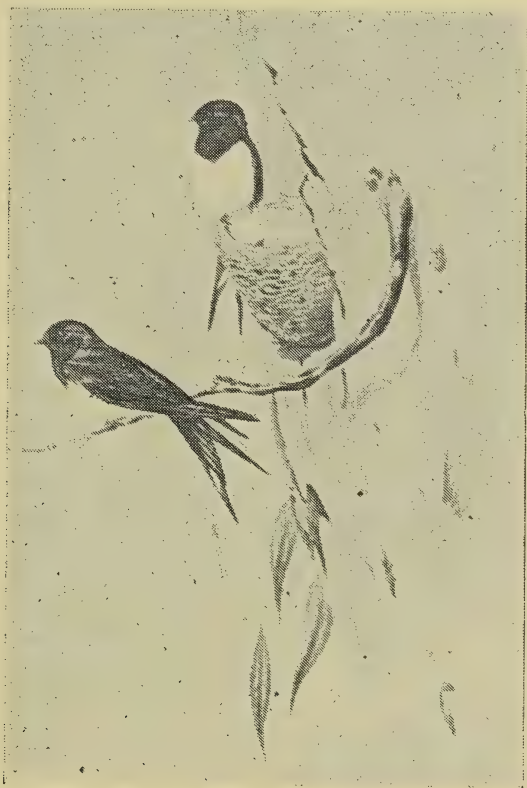


Fig. 3. House-Swallow and Nest. One-fifth natural size.

sun be shining, as you know it often enough does at that time in this bright country of ours, a strain of music continuous for minutes is produced, while it rests upon a post or other suitable object. As it now wishes to choose a partner for the next and following months it must need be busy with the duty of the season. Thirdly,

that owing to the amount of moisture regularly falling upon the ground, they find a part of their sustenance there. As one floats above the short grass the little body assumes an ovate form and the tail feathers become lowered. The short legs prohibit them from standing anywhere other than on a flat surface, and it is not unusual to have them pleasantly rise from the asphalt path as you approach. Swallows gather moths and other insects from the grass as they rise, noiselessly hovering within a few inches, and at times appearing motionless. On the 3rd of April I was interested in watching 14 swallows skimming the surface of the Surrey Hills reservoir. This was at 4.45 p.m., and soon the active flock became 23, after which the number quickly reached 70. The arrivals all came from the south, and still continued until the number totalled about 200 in 30 minutes from the arrival of the first group. They arrived in companies of from 12 to 18. The sun was brightly setting, and the weather mild. The scene above the artificial lake was truly a pretty one, with the distant birds of apparently small proportions and light colour, while those in the foreground were large and dark, all gliding in a circular form till one almost imagined the whole scene was in revolution. The flock left at 5.30 p.m. as the light faded, and all occurred as in an instant, and I was left to contemplate, with only a faint idea that they had moved northwards to their usual roosting place in a group of timber.

It surely goes without saying that everyone is familiar with the Common or Chimney Swallow, yet such facts as the following, gathered by the writer and an able correspondent, Mr. George Graham, will appear as new to us in the natural history of the species.

Nesting Habits.—The species starts to nest in July if the weather be favourable, though the month will vary with the season and latitude. It is an early and late breeder. The chosen position of the nest is a very varied one, such as in caves, spouts of trees over water, barns, under verandahs, and even in a dog-kennel, if the dog has been absent some time. In this latter position the bird has been known to breed for five years (per Mr. C. Gabriel). Even the floating gate of the Williamstown Graving Dock has its nest, under one of the iron ledges. Whether or not the birds resort to the same nest annually I cannot say, but since 1881 two nests in the same hollow of a tree have been occupied each year during the whole 16 to 17 years up to 1898. One of these nests was pulled down on the 16th year prior to spring, and was not rebuilt. I take it the birds were turned aside from the usual custom and went elsewhere. In the building of a nest the birds occasionally make a mistake and persist in doing so. If the nest falls they start again, and a second time it falls. On other occasions nests are partially built and abandoned. A pair will start a nest, and by the time it is half done a number of swallows assemble, fly to and from the nest, twitter considerably, and work is suspended apparently as a consequence. Such nests are not again touched.

It is interesting to know that a House-Swallow in England hatches its eggs in exactly the same time as one in Victoria. The following four observations show—(a) an egg is laid on each consecutive day; (b) the clutch takes 15 days to incubate; (c) the young open their eyes on the ninth day; (d) the young left the nest in Observation I. in 24 days, in Observation IV. in one calendar month (30 days).

Observation I.—August-September, 1899, Heytesbury, Victoria.—To last year's nest, in a much-weathered hollow

at the base of a eucalypt trunk, the birds commenced additions as early as the 6th August, and by the 13th a new tier of plaster, one inch thick, was laid. Immediately following this an inner lining of rabbit's fur, feathers, &c., was fixed in ample time for the first egg. First egg deposited in nest 23rd August, second egg 24th August, third egg 25th August, fourth egg 26th August, fifth egg 27th August. The birds immediately sat, and brought out five young on the 11th September. On the 4th October young left the nest for the first time.

Observation II.—September, 1899, Heytesbury, Victoria. To experiment, the old nest was broken away and taken quite out of sight of the birds. This gave an opportunity to find the time required to build a complete nest. The operation commenced on 7th September, and by the 19th instant the earthen cup was finished. By the 30th instant the lining was fixed and an egg was laid. Without giving any clear explanation the owners made no further advance with this nest, and the single egg remained unincubated.

Observation III.—October-November, 1899, Heytesbury, Victoria. The first egg was deposited in nest on 12th October, and a second on the following day. Several days' watching showed no further development. Considering the nest was abandoned the observation ceased. Passing the nest some weeks later two young were found to be progressing favourably.

Observation IV.—October-December, 1899, Heytesbury, Victoria. Nest in bole of eucalypt. The second egg was deposited on 18th October, the third on 19th, and fourth on 20th. By analogy with this species the first egg was laid on the 17th October. On 5th November the young hatched out, their bodies being rather nude and the down

grey. The eyes opened on 14th November. Young growing rapidly on 17th November, quills well out and showing grey tufts. By the 19th inst. the grey is giving way to black, with chocolate on throat and vent. At this stage the young are so strong and cling so tenaciously to the nest that it is dangerous to take them out for examination, especially on the 22nd inst., when the crown and back are dull black. On 5th December the young left the nest for the first time.

When it is found a clutch of eggs will not develop, certain birds, such as *Gymnorhina tibicen*, place a false flooring to the nest, thus covering the eggs, and immediately relay. Judging from the following note it is most probable the swallow does not come under this head, but under the one where birds turn out their eggs when proved valueless. "In a hollow trunk that has been used for 15 years," writes Mr. Graham, "I found the nest, freshly lined with feathers. Shortly afterwards I felt an egg in it, and on the following day two additional, thus proving carelessness in my touch, or that three eggs were laid in 48 hours. I do not believe an error was made on my part. On the fifteenth day all three eggs disappeared. About nine days later three more eggs were found in the nest, and they are there now (weeks later), probably infertile, as doubtless were the others. There are no rats, cats, or bird-nesting boys in this neighbourhood, so I venture to think the birds, finding no young came on the appointed day (fifteenth), threw them out."

Young.—The providing for the young necessitates each parent visiting the nest every 3 minutes. This is done alternately, judging by 20 visits to the nest in one hour, of which each sex made ten. If only one nestling is supplied at a time, the five in the family would each be fed

every 15 minutes. After the young have quitted the nest for the first time, they return during the heat of the day for several days following. The pipe in the tree above the nest serves the family as a night camp for 10 to 12 days after the young have first left the nest. The non-sitting bird camps in a place apart from the nest during the period the nest is tenanted. While the majority leave the district during the early autumn, a few remain, and then the old birds sing or twitter as well apparently as in the spring. It is not unlikely that this is a training for the remaining young in preparation for the following spring and summer.

Introduced Enemies.—The fox and cat from the mother country cause considerable trouble among our birds. The cat, at the moment, I have noted, is raiding the dry parts of North-Western Australia just as the fox is doing in the south-eastern portion. Near Swan Hill I know the hall of a country house that has a nest in it, and two nails below, upon which the two birds perch in the dusk. In six weeks previous to 1st October, 1898, seven birds were killed by the cat that kept its place in this lobby. If one of a pair was caught the mate would go away for about one to three days and return with a consort. In a day or more one of that pair would be captured, and away the other would go for a mate and return with it. As to which sex was killed no one could say, but I should think the same one, and every time the stranger, thus showing the persistency of one bird to follow up an idea, just as one of the same species will start to rebuild its nest after it has been purposely knocked down on four occasions within a month.

In those districts where swallows build mostly in burnt-out trees, the fox makes a thorough inspection, and all that are not more than 6 or 8 feet above the ground sooner or

later are precipitated, sometimes when empty, at others when containing the sitting birds. The fox will jump or scramble up the distance and grasp in its mouth nest and bird. It seems most unfortunate this scourge should have got among our terrestrial fauna, of which that beautiful form the *Menura* has not suffered least.

Nest.—Open, made of mud, and cup-like, the inner lining being of feathers or grasses.

Eggs.—Ground colour white, much spotted with ruddy-brown or faint lilac. Clutch, 4 to 5 eggs. Length, 0.75 inch; breadth, 0.5 inch.

FAIRY MARTIN

(BOTTLE SWALLOW),

***Petrochelidon ariel*, Gld.**

Pet-rō-kel'i-don ; *ā'ri-el*.

Petros, a rock ; *chelidon*, a swallow ; *ariel*, a sprite.

COLLOCALIA ARIEL, Gould, "Birds of Australia," fol., vol. ii., pl. 15.

GEOGRAPHICAL DISTRIBUTION.—Areas 3, 4, 5, 6, 7, 9.

KEY TO THE SPECIES.—Under surface whitish ; throat with tiny black streaks ; entire head rufous ; rump creamy-white ; tail forked ; nostrils without any superior membrane, round and exposed.

THIS fairy-like swallow arrives in Victoria towards the end of August and leaves again after the summer. If the winter is mild many flocks will stay throughout the year. Although fond of plenty of water, a company will associate their nests in an almost dry creek bed and live in the vicinity of it. From here they daily forage and do well. The generic name originally given was at the time specially

applicable. [Lagenoplastes (*lagna*, a bottle or flask).] The birds build bottle-shaped nests made of mud, and have them upon the cliff or under a bridge until 20 to 40 are together. This makes up the colony, to which they annually return. Work is carried on in the cool of the day—morning and



Fig. 4. Fairy Martin. One-sixth natural size.

evening. Half a dozen birds will help to build each nest (grass and feather lining), about 3 to 7 inches apart, and if, at any subsequent time, you should break off a neck, the whole colony immediately starts repairing it. In less than 15 minutes several thousand mud "bricks" have been

carried and plastered together, and order has been restored. Mr. Price Fletcher in a private diary says:—"Unfortunately this curious and closely constructed home is no protection against some of its feathered foes, for I have seen the Red-rumped Kingfisher, instructed doubtless by its habit of breaking into the tree-ants' nests in order to make a nesting place for its own eggs and young, make persistent war on the colonies of Fairy Martins. The kingfishers fly up, catch the end of the neck or entrance spout in their beaks, and gradually break it off until they reach the eggs or young, which they ruthlessly devour. I have known the pretty little Pardalote or Diamond-bird, which usually builds a nest at the end of a tunnel 2 feet long excavated in some sandy tank, deliberately take possession of one of those spouted nests of the Fairy Martin, and hold it against all opposition from its original constructors, and safely rear a brood of young."

In another case I know of an introduced sparrow that took possession of a nest that was about being completed by the Martins. As this sparrow absolutely refused to leave the nest the Martins mudded it in. Perhaps it was sick and could not leave. In any case my friend released it.

Nest.—Made of mud, with a neck to it that is retort-shape, the funnel extending from the bowl several inches; the inner lining is made of grasses and feathers. A colony of nests is placed under a bridge or on a bank. The figure will illustrate it.

Eggs.—White or white spotted with tawny brown; the spots may be distributed over the egg or at the larger end only. Three to five generally for a sitting. Length, 0·7 inch; breadth, 0·5 inch.

TREE MARTIN

(TREE SWALLOW),

Petrochelidon nigricans, Vieill.

Pet-rō-ke'l'i-don nig'ri-kans.

Petros, a rock ; *chelidon*, a swallow ; *nigricans*, blackish.

COLLOCALIA ARBOREA, Gould, "Birds of Australia," fol., vol. ii.,
pl. 14.

GEOGRAPHICAL DISTRIBUTION.—Areas 2, 3, 4, 5, 6, 7, 9.

KEY TO THE SPECIES.—Under surface whitish ; throat whitish, with tiny black streaks ; frontal band sandy buff ; rump whitish-brown ; tail forked ; nostrils without any superior membrane, round and exposed.

OF every hundred intelligent people who see martins in the woods or near bridges I feel sure ninety-eight never distinguish this species from the second martin of the genus (*P. ariel*, Gld.) That is because there is practically but one difference, and in the distance not discoverable without field-glasses. One has the forehead rufous only, the other has the forehead and crown rufous, each characteristic being always constant. Both have similar ways, and very often occupy the same nature of surroundings. *P. nigricans*, as well as I know, stays for the winter and breeds in holes in trees, while *P. ariel* prefers creeks and cliffs against which to build, or bridges, under which they colonize and nest. In a way it is a migratory bird, leaving after February and returning in August or September. Being strictly arboreal, it hunts in flocks, feeding largely upon micro-insecta. In this respect it is invaluable as an insect exterminator, functioning as few other birds than swallows can do. When each ninth or tenth generation of the aphids comes into existence the birds display wonderful

activity among the winged insects. While the Fairy Martin feeds in a lower stratum, upon the rivers, and the swifts in a high stratum of air, this species works the intermediate one. That is to say, different kinds of insects which live in different strata of air have different kinds of swallows to keep them in subjection, although a theory of this nature is perhaps better taken in a general way. It is strengthened by substituting the House Swallow for the Tree Martin.

There is a Black and White Swallow (*Cheramœca*) that occasionally is seen in the Wimmera, but only on rare occasions. The classical name leads one to believe it eats *Phylloxera*, which I have no doubt it does when winged.

Two species of swifts visit us annually, in November and December, and stay till February. A Swift has never been known to rest upon its feet in Victoria, and only a doubtful one in Australia. They breed in China, and are so rapid in flight that they can breakfast in Asia and dine in Australia on the same day.

Nest.—Hollow of a tree limb, with decayed wood as a base.

Eggs.—White, spotted with reddish brown at larger end, more or less. Three to a sitting. Length, 0.75 inch; breadth, 0.5 inch.

MASKED WOOD-SWALLOW,

Artamus personatus, Gld.

Är'ta-mus per-son'ä'tus.

Artamos, a butcher ; *personatus*, masked.

ARTAMUS PERSONATUS, Gould, "Birds of Australia," fol., vol. ii.,
pl. 31.

GEOGRAPHICAL DISTRIBUTION.—Areas 3, 4, 6, 7, 9.

KEY TO THE SPECIES.—Under surface of body beautiful grey ; rump
and upper tail-coverts clear ashy-grey like the back.

Male—Face and throat jet black.

Female—Lighter in markings of head and throat.

As with the previous member, it is insectivorous to a nicety. When opportunity occurs it shows an interest in an apiary. Seemingly it does not despise the odorous pear slug, according to a neighbour market gardener, who further remarked to me "An odour so powerful that we are obliged when picking fruit to keep to windward of greatly infested trees, and leave them to the care of hellebore and Summer-birds." There is little doubt about the former, but I question any special service by the latter.

Spring sees a struggle in vocal development ; its usual rapid, rasping note is left aside for a moment or two occasionally, and an endeavour to pour forth a bar of melody for the benefit of a member of the gentler sex of its kin is made. The effort is great, and the result, though comparable to the song of many of the bird fauna, falls feebly and brokenly upon the ear of one accustomed to better results from such an effort. However, it is an advance decided on the little varied croak that early becomes ordinary.

In 1895 I noted this species did not appear to build as early as the following, and nature favoured the depositing of two eggs as a clutch in the majority of cases. Of eighteen nests personally observed, five contained each three eggs, eleven contained each two eggs, two contained each one egg. The young were as a whole well advanced in the eggs, and other nests with plumaged young had two in each.



Fig. 5. Nest and Eggs of Masked Wood-Swallow. One-fifth natural size.

Just as the manner is with many other birds so is it with these, that of flying angrily and boldly at you as you observe the perfect quiet of their young in the nest. The mother bird is more retiring in her fear, and the persistent darting flights, almost direct to the intruder, devolve upon the male. The interest in watching their movements is about as keen as in many other families.

On Christmas eve I observed that two young were about to fly from a nest built in an odd-looking piece of dead timber near the ground, which I had watched for eight days previously. One would serve as a cabinet representative specimen, so I withdrew it at 7 p.m. For an hour and a quarter I kept fifty yards away, watching other birds, and returning then I found the parents had removed the remaining young swallow, probably for preservation sake.

Meanwhile I had extracted three fresh eggs (the third one laid the day previously) from another nest of this species, and placed therein the young bird mentioned. The layer of the eggs, returning at once, looked astonished, but immediately and carefully gathered the young bird under its plumage. Continuing this mild experiment, the young feathered bird was now extracted, after being there for fifteen minutes, and a member of the White-browed species, born two days previously, was placed in the nest. The proprietor female bird returned, and a second time gently covered the creature, this time almost a featherless one, as if it belonged to it, and the loss of three eggs was purely a philosophical matter. This young bird was taken through its cradled course of life by the ninth day later, and released on the same day as the two in the nest from which it was removed. The young of the previous species at 24 hours of age are downy and well stored with vitality. The last movement of one made in methyiated spirit was the drooping of the neck and head upon its chest after 20½ minutes had elapsed from the time of placing it in the bottle.

The majority of nests were loosely constructed, but where fibrous roots were with ease available invariably they were used, and the results were compact nests, neatly

arranged. The birds gather the constructive material in the vicinity of the place chosen for the nest, and seemingly do not care to move away from it.

A typical example is easily noticed in the case where a fence divides an orchard from a gorse field, for, on the orchard side, 10 yards from the fence, you will find nests constructed wholly of fruit-tree fibrous rootlets, while on the gorse side each nest is composed of grasses and twigs that can be gathered amongst the bushes. There are, of course, exceptions.

Three characters of combinative material appear to be used, though they pertain possibly more to local influences, and may have but little weight in a wide study of the *Artamidæ*:—1. In orchards, rootlets of the trees, internally fine, but with coarse mantling. 2. In lightly-timbered paddocks, grass stems principally, chlorophyll-bearing before completion, occasionally a few horsehairs. 3. In well-timbered country, twigs of the trees, with a finer internal lining of linear leaves.

The bowls of all the nests are similar in dimensions, but those of the complete structure may vary occasionally to twice the normal measurements. The positions, as with the previous species, generally range about 6 feet, and often enough only 2 feet, from the ground. Nests are placed higher in occasional places here, but, with the exception of *Pinus insignis* and a few species of eucalypti, the rule is, low to mother earth. The two species build promiscuously, favouring a break of low scrubs, which is used for this purpose. The nests are placed in prominent positions, each species as a whole keeping together, but intermixed in both cases with several of each other incubating in their midst.

By the middle of December many of each species were preparing homesteads for the third brood, and they seldom

use the nests of a past family for a future one. Late builders were observed in the early portion of this month (January) carrying twigs. After sundown those birds not engaged in the night tasks of caring for the young or eggs congregate in bodies of from 10 to 15 close to each other in a tree or shrub convenient to the nests and near the ground. It may be a large fruit tree, a sweetbriar bush, or one of many other vegetable forms.

With both kinds I find an egg is deposited each day, and the first of the clutch hatches out on the twelfth day of sitting. The young of the two species fly upon the eleventh or twelfth day from hatching, subject to a slight variation in a number of broods.

Nest.—Saucer-shaped ; twigs externally, with finer grasses within them ; very flimsy or neatly made. Further reference above.

Eggs —Two or three, sometimes four, to a sitting. The under surface may be light brown, or light green occasionally, and all blotched with light or heavy brown. Length, 0·8 inch ; breadth, 0·7 inch.

WHITE-BROWED WOOD-SWALLOW

(MARTIN, SUMMER-BIRD),

Artamus superciliosus, Gld.

Är'ta-mus sü'per-sil'i'ō'sus.

Artamos, a butcher ; *super*, over ; *cilium*, eyelid.

ARTAMUS SUPERCILIOSUS, Gould, "Birds of Australia," fol., vol. ii., pl. 32.

GEOGRAPHICAL DISTRIBUTION.—Areas 3, 4, 6.

KEY TO THE SPECIES.—Under surface of body vinaceous chestnut ; a broad white eyebrow ; bill long and pointed, the culmen exceeding the length of the hind toe and claw.

THE annual arrival of the White-browed Wood-Swallow in Victoria is noticed between the latter end of October and the early part of December, varying as the grasshoppers are early or late in appearing. On so common an insectivorous bird very little more than a general notice has been given hitherto, so that I reproduce here from the *Victorian Naturalist* a portion of a series of observations made by myself in 1895. Reference is also made to *A. personatus*, both species being flocked together.

Previous to settlement for the season they show considerable knowledge or instinct, and generally seem to choose a locality where for the season insect life is specially abundant. At the same time it is noticeable that a certain number are generally associated with a distinct area. Hawking singly, in pairs, or in a flock, constantly assembling upon the grassed ground, they raid. In the latter case they move by jump motion. Often does a single bird (but never a silent one) choose a pinnacle, some twenty feet high,

upon the upper portion of a tree, and, settling itself to the business of the evening, leaves its headquarters in direct pursuit of a dipterous or other winged insect. Returning it essays another chase, continuing to repeat the same for a considerable time, soaring downwards and winging its active upward way by a series of rapid flaps. Previous to entering upon the serious portion of life—nesting—the birds assemble in flocks amongst the lower portions of the higher leafy vegetation, causing a vocal din such as one would not expect from a group of birds so graceful in their movements. The harsh, sharp, and powerful chirps of a hundred birds, continuously repeated, are not as pleasant (at all events somewhat modified) as in the sobered parents of 21 days later. I remember a large flock of the swallows taking possession of a cluster of timber in which were a Black Fantail, its mate, nest, and eggs. Only occasionally could the little bird be heard. It tried and generally succeeded, after they had retired for the night.

The second of a weekly visit showed their desire for nest-building had in part set in, and the constructions were completed in one or two days. Some were rapid in work, while others appeared to play in comparison.

A clutch of eggs was observed on 8th November, with the birds still in flocks on the 17th of the same month. With this species both sexes incubate. The young of others were on the wing by the 23rd, but before leaving the nests a relic of inheritance was distinctly noticeable in the horizontal and perpendicular motions of the short-plumaged tail. It is in perpetual daily motion, and agrees with the day movements of those of the parents. The fledgling, when taken from the nest, announced itself by two calls, one imitative of the general note of the mother,

though more broken and feeble, and the second of fear. The latter was the result of being away from its nest 15 minutes. This bird we endeavoured to domesticate, but without success; it refused to eat. The eggs varied in markings slightly, with a deep or light ground colour; one egg in a set of three had the zone of spots at the narrow end, the other two were normal. They differed on the average only a shade in dimensions, and in the number to a clutch from four to two. Of twelve nests observed, three contained four eggs, six three eggs, three two eggs; all well incubated. The nests about here, though slight in structure, were generally faithfully built of rootlets or grasses, or more often twigs and grasses, and in many cases artistically arranged. They were seldom above 6 feet from the ground, and placed in all manner of places, preference being given to perpendicular slight stems, though nearly as often placed upon the horizontal firm twigs or branchlets of assorted shrubs and bushes. One nest was placed in the socket for a padlock slip-panel, a second in a furze or whin hedge, many in bushes of the same or in *Leptospermum*, others in acacia wattles, and fewer in eucalypts, as far as this district is concerned.

That these two members were here in considerable numbers may be deduced from the fact that 40 nests, building, tenanted, and vacated, were observed by the writer on the 16th December within a mile's walk, and nearly within the straight line lying between its termini. Two orchards, a belt of furze or whin, and an almost dry watercourse had to be passed by. The nests were placed in the orchards more numerously than in the legume whin, the areas being equal. Plum, pear, apple, and cherry trees received the nesting honours. One nest was placed in a "sweetbriar" low to the ground, that is about 2 feet from it, in the township of

Surrey Hills. My chord of generosity was somehow struck, so I placed a piece of basalt in the nest, in order that the birds would be saved more serious distress later on. Next week the nest was gone, and so would have been the eggs but for the stone. This does not cast a reflection on the Surrey Hills boys, for they are not below the average in moral principles.

On a previous occasion I referred to the sensitiveness of this bird. Its hardihood is now the chief feature, for no less than seven times was a nest in a young elm enclosed within a guard destroyed, this being done to save restless boys from making investigations and damage to the structural beauty of the tree. Each time the nest was bodily taken away, leaving only a remnant, the birds would persist in rebuilding it within the same fork, till the seventh part edifice was destroyed, and I have no doubt they then sought pastures new, for no further attempt to build was made in that tree.

Nest.—Similar to preceding species. Several nests may be placed in orchards.

Eggs.—Similar to preceding species, though varying greatly. Obsolete marks of greyish-brown appear as if beneath the surface.

WOOD-SWALLOW,

Artamus sordidus, Lath.

Är'tä-mus sor'did-us.

Artamos, a butcher ; *sordidus*, greyish-brown.

ARTAMUS SORDIDUS, Gould, "Birds of Australia," fol., vol. ii., pl. 27.

GEOGRAPHICAL DISTRIBUTION.—Areas 2, 3, 4, 5, 6, 7, 9.

KEY TO THE SPECIES.—Under surface of body dull brown ; chin scarcely any darker ; back and rump brown ; two or three quills of wing edged with white ; bill long and pointed, the culmen exceeding the length of the hind toe and claw.

THIS, the common Wood-Swallow of Victoria, is to be found throughout the year in the colony. The other members upon our list are migratory in one sense of the word, leaving before, and returning after, the winter season. The birds have the peculiar habit of closely hanging like a hive of bees. There are eight or nine species of this insectivorous genus, of which five generally migrate, sometimes six. *Artamus sordidus* is a particularly pleasing bird when on the wing, its graceful soar making it a general favourite in all parts. Like the other members it displays no fear of man, and hunts the haunts of the garden for insect food with the greatest of confidence. The nesting season is September to December, and as to what kind of timber it will place the nest in it is not at all particular. Some birds consider this important. The disposition of either sex is very gentle, and much can be done with them as described with the rarer Masked species.

A fourth, the most beautiful form, is found along the

Murray River, especially west of Echuca. It has a white rump and abdomen, and is known as the White-rumped Wood-Swallow (*Artamus leucogaster*, Valenc.)



Fig. 6. Wood-Swallow, Nest, and Eggs. One-fifth natural size.

Nest.—Very similar to the preceding two species. The bird shows a preference for spouts of trees, at the ends of which the slight nests are placed, but the position in the timber may vary greatly. The figure above partly illustrates it, while the second illustration is the nest of the

Magpie-Lark with the eggs of the White-rumped Swallow in it. This is usual.

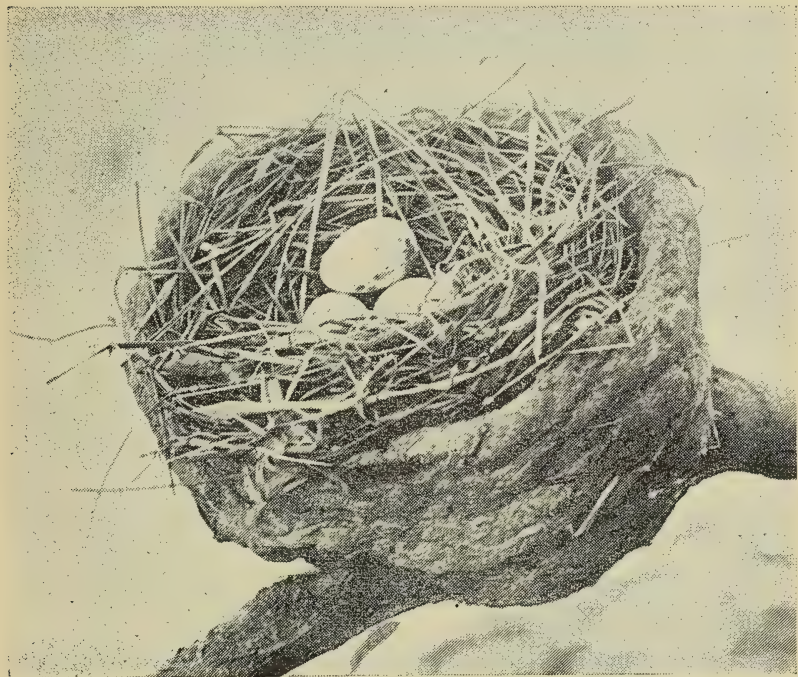


Fig. 7. Eggs of White-rumped Wood-Swallow in old nest of Magpie-Lark. One-half natural size.

Eggs.—Three or four for a sitting. They vary in markings considerably. The ground colour is usually dull white, but very often nearly pure white, and always marked with blackish spots, particularly to form a zone near the broader end. Length, 0·9 inch; breadth, 0·7 inch.

SCARLET-BREASTED ROBIN,

Petroeca leggii, Sharpe.

Pet-re-ka legg-ē-ē.

Petros, a rock ; *Legge*, a celebrated ornithologist.

PETROICA MULTICOLOR, Gould, "Birds of Australia," fol., vol. iii.,
pl. 3.

GEOGRAPHICAL DISTRIBUTION.—Areas 2, 3, 4, 5, 6.

KEY TO THE SPECIES.—*Male*—Upper surface black ; white frontal
mark very large ; throat black ; breast scarlet.

Female—Throat and back grey ; a flush of red on breast.

THERE are seven species of red-breasted robins in Australia. Some are scarlet, others are pink, rose, and flame-breasted. While the "red-cap" shows a decided preference for the dry timber, the "flame-breast" prefers the moist timbered lands. The wildest hills of Victoria hold the Pink-breasted species, as well as the Rose-breasted species.

The "flame-breast" and the "scarlet-breast" are the birds that visit the outskirts of the towns in autumn and winter. They enliven us with their sweet, though hard, notes, and beautify the fields while they stay. Where they go in spring and summer has been as great a mystery as where the Pelican lays its eggs, but now we know they keep on their bright colours and simply retire to the forests to nest. The "flame-breast" goes away earlier and deeper into the woods than the "scarlet-breast." While comparing this gorgeous bird with the conspicuous Blue Wren it is interesting to note that the male robin is always in red, while the wren moults its blue and goes through the winter in a modest brown dress, and with spring dons the blue again. It takes a robin at least three years to secure a thoroughly brilliant red. To see 35 male robins of one

species close together in a field is a sight worth a deal of trouble to see. This occurs in July, before the breeding season in August and the following four months. Two or three broods are reared in a season. The male "flame-breast" (*P. phænicea*) is a little musical. It has a set bar containing some seven notes, very sweet, varying, and occupying about two and a half seconds in production. After the passing of cold months—as May, June, and July—the first of bird-voices is decidedly welcome. The time to study such is at this period of the year, for with the incoming of spring they seem to vie with one another—the males do. The throat of the Flame-breasted Robin is red, while that of the Scarlet-breasted species is black.

Nest.—Cup-shaped, neatly and compactly made of bark, ornamented exteriorly with mosses and lichens, and lined interiorly with dry grasses, feathers, &c. It is placed on a horizontal branch, but may be put in a fork near the ground.

Eggs.—Three or four for a sitting. Ground colour pale green or creamy-white, both spotted with greyish, blue-grey, and brown. Length, 0·75 inch ; breadth, 0·6 inch.

RED-CAPPED ROBIN,

***Petroeca goodenovii*, Vig. and Hors.**

Pet-re-ka gud-ē-nō'vē-ē.

Petros, a rock ; *oikos*, a family ; Goodenough (proper name).

PETROICA GOODENOVII, Gould, "Birds of Australia," fol., vol. iii., pl. 5.

GEOGRAPHICAL DISTRIBUTION.—Areas 6, 7, 9 ; occasionally 4 in autumn.

KEY TO THE SPECIES.—*Male*—Forehead red ; throat black.

Female—Body greyish ; forehead faintly marked with red ; no red in young ; bill about equal in height and breadth at the nostrils.

THERE are two red-capped robins. This one, without a red throat, and named before the other was discovered, annually visits the southern and eastern parts of Victoria. Its proper habitat is in the north-west of the colony. From there it extends across the continent. I have specimens of one "red-cap" from Port Darwin at one corner, and of the other "red-cap" from Cape Leeuwin at another. To us it is the Mallee robin, although other robins, without red breasts, also inhabit the same timber. There is the Black and White Robin, as well as a grey Scrub-Robin. This last species (*Drymacædus brunneopygius*) belongs to another genus, and in more respects it differs from *Petroeca* than the latter does from *Saxicola*, the British robin. This beautiful and sprightly little creature that is just vain enough in winter to fully show its coat of brilliant colour, retires to the bush in early spring. There it arranges to build a compact and elegant cup-like nest. The time occupied in the building of this house will vary

with the circumstances, but 12 to 15 days is about the duration of the bulk of the cases. When finished it is an elegant home, strong in beauty by the external decoration with mosses and lichens.

The eggs, two in number, or three on rare occasions, are laid on successive days, and the time occupied in incubation is 14 days.

Mr. J. A. Hill, a naturalist-farmer near Murtoa, writes to me to say that the birds have two broods in a season, the first in August and the last in December. Very young birds are flying about in September, and birds are accompanying their parents in April (Swan Hill district). The young males of last year nest in the following August, but they are unmatured as regards their plumage, and resemble more the hen birds. This early breeding applies also to the Hooded Robin. It is specially sensitive to danger, and when any person approaches the nest or young the male feigns a broken wing, and with active legs hopes by this means to draw you away from the seat of anxiety. Mr. Hill, who has had considerable experience with the birds of his district, considers this species the most useful insectivorous bird in that part of the country.

The first time the red-breast was seen in Australia by a naturalist, I am inclined to believe, was upon a boulder in a field and during winter, hence the name. Robins glory in a stony field, and flit from one rock to another, resting a considerable time on each, with great glee. The hen birds are not musical, but very much enjoy listening to the song of two or three males.

Nest.—A delicate cup-like structure of the same material as the previous species, but more neatly built, and very prettily ornamented with mosses to appear like the bough or fork on or in which it may be placed.

Eggs.—Generally four to a sitting, sometimes three. Ground colour greenish-grey, with lilac-brown spots, especially around the greatest diameter of the breadth. Length, 0.6 inch ; breadth, 0.5 inch.

HOODED ROBIN

(BLACK AND WHITE ROBIN),

***Petroeca bicolor*, Vig. and Hors.**

Pet-re-ka bi'kul-or.

Petros, a rock ; *oikos*, a home ; *bi*, two ; *color*, colour.

PETROICA BICOLOR, Gould, "Birds of Australia," fol., vol. iii., pl. 7.

GEOGRAPHICAL DISTRIBUTION.—Areas 3, 4, 6, 9.

KEY TO THE SPECIES.—Under surface white ; insertion of wing white ; base of tail white. Male has a black throat, the female an ashy one. Bill about equal in height and breadth at the nostrils.

Young.—Dark brown above, lighter below ; wings and tail like female.

VERY few people know the relationship of this species, and to consider it as equal with a "red-breast" seems just beyond reason. But it is not so, because, if you compare the two, the difference is simply a matter of colour. The structure is very much the same in each case. The construction of head and bill, disposition of tail and wing feathers, and style of legs and feet all help to harmonize. The old name of "Black and White Nymph of the Woods" (*e.g.*, *Melanodryas bicolor*) exactly suited the bird as far as appearances go. It is a denizen of the light timber, and never ventures as a rule to leave the covert suited to its nature. We cannot always trust to outward appearances

in the definition of bird species, any more than we can in other matters. To call our present subject a "black and white wood-nymph" would not do even in Australia, for the simple reason that we have another such "nymph" in the north-west of the continent that is specifically different

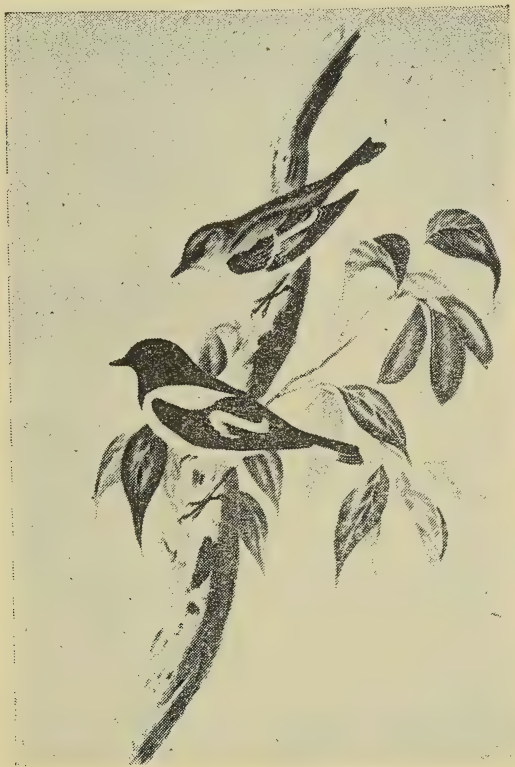


Fig. 8. Hooded Robin, male and female. One-fifth natural size.

only in a slight degree. To call a bird so in Africa would lead to a hopeless tangle, as there are a dozen such. The classical baptism (*Petræca bicolor*, Vig. and Hors.) is registered all through the civilized world in a "fuller" way than most of my readers are registered. By the above

(*M. bicolor*) you will observe this species appears to have been born twice. The error has since been rectified. The Hooded Robin is an active insect-hunter, darting from bush to bush in search of coleopterous and other insects or their larvæ.

Nest.—Cup-shaped, composed of bark and lined with fine grasses. It has the general appearance of a robin's nest, but is not so finely built as the most of them, and is placed nearer the ground.

Eggs.—Three to a sitting, sometimes two. The ground colour is apple-green without spots, or paler green without spots. Length, 0.75 inch; breadth, 0.6 inch.

YELLOW-BREASTED SHRIKE-ROBIN

(YELLOW ROBIN),

***Eopsaltria australis*, Lath.**

Ē-op-sal'tri-ä às-tra-lis.

Eos, dawn; *psaltria*, a female harper; *australis*, southern.

EOPSALTRIA AUSTRALIS, Gould, "Birds of Australia," fol., vol. iii., pl. 11.

GEOGRAPHICAL DISTRIBUTION.—Areas 3, 4.

KEY TO THE SPECIES.—Abdomen bright yellow; only upper throat whitish; upper surface greyish; rump pale yellow; bill at nostrils broader than high, culmen 0.7 inch.

THE home of this strangely-coloured robin is in the moist densely timbered lands, principally of the eastern portion of our colony. In the drier and western half there is a

second species of the genus of seven known species, but the yellow is displaced by white (*E. gularis*, White-breasted Shrike-Robin).

The growers of the small kinds of fruits scarcely realize the value of this most thorough insect-eater, for where there is a humid valley this is one of the sure birds to be daily found doing its duty.

The silent, unobtrusive bird, that would not so much as disturb a thought of the naturalist in a glen, will remain for minutes together without any apparent movement of muscles or feathers, attached in a perpendicular position to a tree. Both watcher and watched are as if immovable and uncomfortable, and the thought naturally arises in five minutes' time who is to be first in the move; however, the bird settles it by noiselessly darting at a fly, and regaining a position that warrants a change for you also. The bird will fly from undergrowth to stem of tree, clinging thereto as is the manner of the tree-creepers, but not creeping. One Saturday afternoon I approached a tree, thinking to take off what I considered at the distance to be quite a new fungus for Box Hill, when, without any previous movement, the object became winged, and away went a Yellow Robin. This species is one of the foster parents of *Cuculus pallidus*, a bird somewhat similar to *C. flabelliformis*. On 24th November I saw birds in many grades of plumage, juvenile to adult markings, in this year's brood. The changes are rapid—first, yellow on the neck; second, chest yellow; third, nearly developed yellow, with straggling brown feathers showing irregularly along dorsal surface.

By November the nests become deserted. In one the fearless bird had to be pushed off before it would evacuate. Although nests are generally placed within a few feet of

the ground, I noticed one at twenty feet from it. New nests are sometimes placed two feet above those of last year in the same shrub. Whin Acacia (*A. verticillata*) may support them, or a three-pronged perpendicular sapling, or, which is usual, a horizontal light branch.

Nest.—Cup-shaped ; placed in scrub and near the ground, in a fork or on a limb ; made of bark, covered with mosses and shreds of bark, and lined with grasses.

Eggs.—Two or three to a sitting. Ground colour deep or light green, with markings of brownish red or tawny brown over much of the surface. Some have a zone around the bulged end. Length, 1 inch ; breadth, 0·7 inch.

CRESTED SHRIKE-TIT,

Falcunculus frontatus, Lath.

Fal-kung'kū-lus fron-tā'tus.

Falco, a falcon ; *culus*, diminutive ; *frons*, front.

FALCUNCULUS FRONTATUS, Gould, "Birds of Australia," fol., vol. ii., pl. 79.

GEOGRAPHICAL DISTRIBUTION.—Areas 2, 3, 4, 6, 7.

KEY TO THE SPECIES.—*Male*—Under surface yellow ; back olive green ; throat black ; head crested ; secondaries graduated ; culmen strongly curved downwards.

Female—Throat green and not black as in male.

THE eastern and western sides of the continent have each one species of shrike-tit, and Central Australia is visited by the eastern bird. It seems to me the birds of the western colony have all travelled from the eastern side—some through the north, others through the south, and

many midway. The western form of this genus has with time and new conditions in all probability differentiated itself from the eastern species known to us in Victoria. It is an active and powerful bird, quite acrobatic while amongst its element. It passes the bulk of its time upon the uppermost branches of eucalypti, say 50 feet high, and keeps in subjection that portion of coleopterous life which is not sought for by most other birds. It checks the fecundity upon the "sky-raking" branches very much as the small tits do upon the peripheral parts of the lowermost branches. One scours the tops of the aged eucalypti, the other (*Acanthiza lineata*) the bottoms of the young eucalypti. The bill of the Shrike-Tit is very strong, by means of which it is a furious biter; such an instrument proving very fatal to that destructive pest the cockchafer beetle. The erected crest and animation of the sprightly bird, as it climbs or clings to the branches of the trees, just suits it. The uncommonness of the species lies more with the nest than its owner. There always is a difficulty in the procuration of it. First you must find it; then you are to secure it. Two nests, taken in Peppermint Gums (*E. amygdalina*) some forty feet from the ground, in the consecutive years 1893-4, and in the same paddock, were obtained by a young member of the Surrey Hills Boys' Field Club. I am indebted to him for both finds, each containing three eggs. One was found on the 4th of December, 1894, and the other in the same month of 1893. Had not the sitting bird continued to sing while on the nest, it would not have been observed. This is the only time I ever heard the Shrike-Tit sing. It is a very silent bird.

Nest.—A truncated sphere, beautifully built of grasses covered with cobweb. It is placed in the three-pronged

fork of a slight upward branch on the top of a high eucalypt.

Eggs.—Two or three to a sitting. Dull white, spotted mostly all over with lilac-grey, portions of which appear as if beneath the surface ; more numerous at broader end.

SHORT-BILLED TREE-TIT,

Smicrornis brevirostris, Gld.

Smī-cronn'is brev-i-rostris.

Smicros, a variety of *micros*, e.g., small ; *ornis*, a bird ; *brevis* short ; *rostrum*, a beak.

SMICRORNIS BREVIROSTRIS, Gould, "Birds of Australia," fol., vol. ii., pl. 103.

GEOGRAPHICAL DISTRIBUTION.—Areas 3, 6, 7.

KEY TO THE SPECIES.—Under surface pale yellowish-buff ; upper surface dull olive yellow ; lores, eyebrows, and ear coverts light reddish brown ; culmen $\frac{1}{4}$ -inch in length.

EASTERN Australia has one species of *Smicrornis*, and the western and northern portions of our continent the other. This is one of those little creatures that is only a fraction longer than 3 inches, and for a distinguishing mark has a stumpy bill. Like most of the other tits it associates in shrubby trees, but unlike the majority it passes much time in the high branches of tall timber, clinging in all sorts of positions, and making a thorough overhaul in search of insects, scales, and "hardwings," or other things. Unlike the rarer bird of similar habits (*Pseudogerygone culicivora*) its voice is not a strong one, resembling more that of the "Yellow-tail." The *Pseudogerygone* has a dolce yet powerful voice (a lullaby), which I have only heard in

Western Australia. The breeding months are September and October, and the young early assume a likeness to their parents, both sexes being much alike.

Nest.—Suspended, side-entranced, pyriform structure made of grasses, cocoons and mosses, lined internally with feathers. It is small, and in this respect corresponds with the bird.

Eggs.—Three to a clutch ; in colour brownish buff, spotted at larger end with light brown, sometimes with a zone. Length, 0·6 inch ; breadth, 0·45 inch.

YELLOW-RUMPED TIT

(YELLOW-TAIL, TOM-TIT),

***Acanthiza chrysorrhoa*, Quoy and Gaim.**

A-kan'th'i'zä kris-ō-rō'ä

Akanthis, a linnet ; *chrusos*, gold ; *rhoa*, a stream (of song).

ACANTHIZA CHRYSORRHOEA, Gould, "Birds of Australia," fol., vol. iii., pl. 63.

GEOGRAPHICAL DISTRIBUTION—Areas 2, 3, 4, 5, 6, 7, 9.

KEY TO THE SPECIES.—Base of tail bright yellow, like upper tail coverts ; forehead white spotted ; dark band on tail, occupying nearly terminal half of feathers ; tail quite even ; tarsus scutellated ; first primary narrow and short, half length of secondary primary.

THIS tit is the common hedge-row bird of Victoria. So affable is its nature that it not only associates with men and hawks, but builds its home against theirs, especially of the latter. In that case it may be described as a semi-detached two-roomed house, as the tit's nest is often made of two

rooms. Each tit that owns a house in an orchard is worth more than its weight in gold, including the young in the weighing. Even if the family is five, the more the merrier. Each bird at 1 oz. and the gold at 80s. would make the demand of, say, 20 guineas a just one, so valuable are the services of this insectivorous genus. On no account whatever, except for strictly scientific purposes, should this bird be killed or driven from a garden. Especially must we consider that as a worthy labourer it demands nothing for its hire, and if it expects anything it is peace. That surely is easily dispensed from the storeroom of our benevolence. Let me give one word of warning: see that your honest sons are made more honest, if that is possible, by the absolute protection of its nest and eggs. In every way encourage the bird to spend its time about your gardens—not necessarily in them, but around them. This little tit, or so-called “Yellow-tail,” to city people the most familiar of country birds, is of a small size, and even appears to attract more notice than the Ground-Lark or proper Pipit. The chrome-yellow of the upper tail coverts, with apex of each rectrix barred with black, makes this little grey bird a distinctly prominent one. The markings are only noticeable when the birds, finding themselves disturbed on the feeding ground, rise upon wing, and with blended voices alight in the acacia. They quickly return to the grass, and appear to have little fear of man. With the aid of their tiny feet the birds move rapidly along the ground in search of insects.

This one of ten species of a genus peculiar to Australia puts aside its gregarious habit about July, and enters upon the work of nest-building, a structure that is generally placed within 9 feet, or rarely over 12 feet, from the ground. The house is most often one-chambered, dome-

shaped, and with cup-like cavity fitted above for the use of the non-sitting bird when the shades of night have fallen and the food of this species has retired. Occasionally two chambers will be formed, without an upper cavity, one lined with care, the other not so, and no dependence can be placed upon which will be correctly finished. I believe the cuckoo's action will finally settle the matter, for if the "parasite's" egg be deposited in one cavity, before laying of eggs of the rightful owner, the tit will place its eggs in the other, with the result that the cuckoo's egg will not be hatched. In the case where a one-chambered nest has become utilized by the stranger, the tit may cover the introduced coloured egg with a lining of feathers, and so prevent incubation; but this is not generally resorted to, and the strongest chick becomes the sole surviving member of the group. At another time the cuckoo may be "unfortunate" in the deposition of its egg within the cup-shaped cavity of the nest, after which it will naturally remain unhatched. This is of rare occurrence. One season I observed a double nest built in the whin, both rooms perfect externally, but the lower one, with its entrance facing the bush—an unusual position—finished internally. The whole was new, and the upper one contained an egg of the Narrow-billed Bronze Cuckoo, the lower a clutch of the tit. The birds appeared to be in excellent plumage, and were probably old enough to remember the disappointment of one or two past seasons, in so much as related to the hardship of rearing an uncongenial bird. As with previous cases, the foreign egg remained unhatched, and this gave the smaller bird an opportunity to rear its young without the stronger opposition of the well-known fighting character. Rarely do small birds add a second nest of the same nature. Mr.

Romanes has noted this inclination in the Common Wren of Europe, and individual cases are elsewhere quoted.

The "Yellow-tailed Tit" of the boys builds its nest not only in hedges, but on the larger branches of various trees, and, as has been previously noted, to the sticks of the lower portion of a crow's or raven's nest, without any interest in the hazel or white irides of their black neighbours. The parasitical Mistletoe (*Loranthus*) is also resorted to, as well as the wattle.

A case of two clutches of eggs placed in the same nest, and being sat upon by two birds, is quite unusual. The eggs numbered six, and one male bird appeared to feed the sitting ones with insects. That two birds sat upon the eggs was proved by the flight of both from the nest upon approaching it. How this state of matters would have developed I cannot say, as observations were interrupted by the wilful destruction of the nest. The disposition of this species is certainly a friendly one. A young neighbour of mine one evening caught a family of this tit, comprising the parents and three young ones, and transferred them, along with the nest, to a wire-faced box. They were carefully kept and fed for fourteen days, at the conclusion of which they were allowed their freedom. Each evening for three weeks they returned to the box to roost, and doubtless would have continued the custom had not the innocent-looking cat of the house preyed upon the five in the late hours of the night. In further evidence of the good-nature of this bird I may say that, having extracted the eggs from one nest, I kept them away for nearly twenty minutes, and then returned two of the three with indented sides, less a cuckoo's egg that was with them. The bird gracefully, though with agitation, returned to its eggs, and, I believe, brought the young out, according to evidence seen

on my return to the nest a few weeks later. I know it sat upon the eggs for days after the occurrence.

Nest.—Suspended, side-entranced, and bearing a depression on the head; composed of grasses, bark, and spiders' cocoons, the outside being very roughly finished; feather lining within. Further description given above.

Eggs.—White, sometimes with a few faint pink spots at one end. Three or four make a sitting. Length, 0·67 inch; breadth, 0·5 inch.

BUFF-RUMPED TIT,

Acanthiza reguloides, Vig. and Hors.

A-kan'thi'zä reg'ū-loid'es.

Akanthis, a linnet; *regulus*, a little king, a small bird so called; *idos*, like.

ACANTHIZA REGULOIDES, Diggles, "Ornithology of Australia," pl. 99.

GEOGRAPHICAL DISTRIBUTION.—Areas 3, 4, 6, 7.

KEY TO THE SPECIES.—Base of tail pale fulvous-brown; upper tail-coverts dull yellow; dark band on tail, occupying nearly terminal half of feathers; tail quite even; tarsus scutellated; first primary narrow and short, half length of second primary. Total length, 4 inches; culmen, $\frac{1}{2}$ inch; wing, 2 inches; tail, $1\frac{1}{2}$ inches; tarsus, 0·65 inch.

OUR nearest allied bird to *A. chrysorrhoa* is the Buff-rumped Tit. It is easily known from the former by its absence of white markings on the forehead, and the fainter colour of the upper tail-coverts. It is numerous and well dispersed over the country lying south-east of an imaginary line between Spencer's Gulf and the Fitzroy River, in Queensland. Both species are popular friends of tillers of the soil. Rarely are they recognized as two species. *G. reguloides*,

by its habit of hanging to gum-trees, is generally confused with the Striated Acanthiza, but when it is associated with *A. chrysorrhoa* the two are also considered as one. The differences of manner and markings are quite evident when once shown. Even in the newly fledged of both species there is no room for a difficulty, for the conspicuous markings of the adults are upon the young before leaving the nest. The best reference plate of this species is to be found in Diggles's "Birds of Australia."

This restless bird has quite a different series of notes to the previous one, the calls being sharp, high, regular, metallic, and it associates in flocks in the eucalypti, flying quickly and with a less jerky motion than that of *A. chrysorrhoa*. The position of the compact and artful nest varies from a bracken 18 inches from the ground to a sapling, with occasionally a hedge as an environment. It is built according to circumstances, but always upon the same plan. The architecture will only vary in the material, and feathers where obtainable will form a favourable inner wall. One of my friends tells me of four nests observed by himself in a forest near Camperdown which were built, so far as the main portion was concerned, with sheep's wool and grass, with rabbit's fur for the internal lining. In suburban districts the soft bark of trees is largely used, with feathers. The eggs are laid on each alternate day, and three is a usual number for a sitting, sometimes four. The time of incubation is 18 days, and the time from the breaking of the shell to the departure from the nest 19 or 20 days, and, like the former species, it is vigorous, and capable of first flight almost equal to that made by the parents.

Mr. Geo. Graham, of the Heytesbury Forest, having more than ordinary interest in nature, has written to me of a fact showing evident persistence on the part of a pair

of birds to rear a family. The first brood was breakfasted on by a fox, which naturally left nobody at home. The second clutch of three eggs would not hatch out on the sixteenth day of sitting, so a third clutch of equal number was placed upon these, with material between. These hatched out on the eighteenth day from the laying of latest eggs.

Nest.—Dome shape, side entrance ; suspended in growing bracken fern or grass, or in the loose bark of the trunk of a large gum. It is made of bark and grass, and lined with feathers or other soft material available.

Eggs.—Three or four to a sitting ; white, faintly spotted at the larger end with pale reddish-brown and purplish-brown. Length, 0.6 inch ; breadth, 0.45 inch.

BROWN TIT,

Acanthiza pusilla, Lath.

A-kan'thî'zä pū'sil'ä.

Akanthis, a linnet ; *pusilla*, very small.

ACANTHIZA PUSILLA, Gould, "Birds of Australia," fol., vol. iii., pl. 53.

GEOGRAPHICAL DISTRIBUTION.—Areas 3, 4.

KEY TO THE SPECIES.—General appearance light olive-greenish ; band on tail subterminal ; throat ashy-white ; head like back, except scaly feathers on forehead ; throat and breast perceptibly streaked with dusky black ; upper tail coverts reddish, contrasting with upper parts of body ; no white tips to tail feathers ; forehead pale rufous, with dusky brown tips to feathers ; flanks light fulvous-brown. Wing, 2 inches ; tail, 1.75 inches.

THE little Brown Tit is a bird you will often find located in the Melaleuca. Although it is very small and difficult of

observation in the thick foliage of creek or upland timber, its pleasant and varied voice will help you to trace its whereabouts. The notes are liquid and musical, pitched with variety, and extensive; heard to advantage only when one is near, for its mellow voice is not strong enough to



Fig. 9. Nest of Chestnut-rumped Tit in tree-spout. One-third natural size.

penetrate beyond the distance of a few yards. In a single case communicated to me the time of laying of three eggs was forty-eight hours apart, and the young remained in the nest eighteen days, which is longer than the usual time with

small birds. From five nests of this species a fox extracted the young birds, and it has become a pest to the observer and to young Laughing Jackasses (*Dacelo gigas*), which it will snatch from low stumps.

A tit that bears a general likeness to this species is the Chestnut-rumped (*A. uropygialis*, Gld.), and two much rarer ones are *A. pyrrhopygia*, Gld., the Red-rumped Tit, and *A. inornata*, Gld., the Plain-coloured Tit. The first is found in western Victoria, but the latter two only in the north-west of the colony.

Nest.—Dome-shaped and suspended in grasses or near the ground. In appearance it is like that of the preceding species, with a slight funnel or overmantle to the entrance. Length, nearly four inches, slightly narrower than long.

Eggs.—Three to the clutch; similar to that of the preceding species, and generally bearing a zone on the broadest portion. The eggs of young birds may be quite spotless.

LITTLE TIT

(YELLOW TIT),

***Acanthiza nana*, Vig. and Hors.**

A-kan'thi'zä nā-na.

Akanthis, a linnet; *nanos*, a dwarf.

ACANTHIZA NANA, Gould, "Birds of Australia," fol., vol. iii., pl. 60.

GEOGRAPHICAL DISTRIBUTION.—Areas 3, 4, 6.

KEY TO THE SPECIES.—Upper surface uniform olive-green; under surface pale yellow; throat rufescent, streaked with whitish shaft lines; band on tail strictly subterminal; tail quite even; tarsus scutellated.

THE Little Tit should perhaps be recorded as an occasional visitor to rather than a resident of the south-east districts.

From its close general resemblance to the other Acanthizæ it is difficult to distinguish among the foliage. It has a note slightly different from the others, and is most numerous in the Wimmera district.

Practically it performs that service in the dry areas that *A. pusilla* does in the moist parts. During winter it travels long distances, and on more than one occasion I have been surprised to find it south of County Evelyn late in the autumn.

Nest.—Dome-shaped and roughly formed ; side entrance near top, without a mantle. It is suspended from foliage on various shrubs in the scrub. In many respects it is similar to those of the two previous tits.

Eggs.—Three, sometimes four, to a sitting ; white, blotched with reddish and lilac spots, particularly on the bulged portion. Length, 0·65 inch ; breadth, 0·45 inch.

STRIATED TIT

(HANGING TIT),

***Acanthiza lineata*, Gld.**

A-kan'thi'zä lin'ē-ā'tä.

Akanthis, a linnet ; *lineatus*, lined.

ACANTHIZA LINEATA, Gould, "Birds of Australia," fol., vol. iii., pl. 61.

GEOGRAPHICAL DISTRIBUTION.—Areas 3, 4, 6.

KEY TO THE SPECIES.—Head a little more rufescent-brown than the back, and streaked conspicuously with whitish shaft lines ; back olive-greenish ; throat ashy white ; band on tail strictly subterminal and not equal to basal half of tail ; tail quite even ; tarsus scutellated.

THE smallest member of its genus is the Striated Tit, peculiar to Tasmania and our continent. It is the well-

known "Hanging Tit," recognized by its manner of scampering through the "gum" foliage most of its time in search of food, and by being suspended from leaves at the extremities of the branches.

The Melbourne district contains three groups of "tits" in popular nomenclature—one found in the trees, which

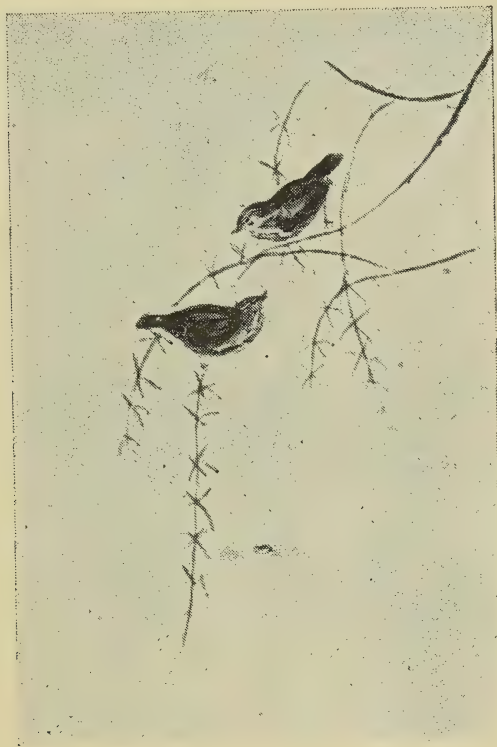


Fig. 10. Striated Tit. One-fifth natural size.

includes this species, *A. pusilla*, and *A. nana*; a second preferring the ground, its representative being the *Chthonicola*, or "Striped Ground-Tit" by local designation; and a third of "go-betweens," represented by the Buff-rumped and Yellow-rumped Tits.

The principal feeding ground of this species is on the peripheral parts of eucalypti, and it is well worth noting that it is the special business of this bird to reduce a horde of insect life upon the tips of branches that are visited by very few other birds. Just as a Honey-eater flickers before a richly-laden flower, so does this one before the extreme tips of boughs before hanging upon them to secure what it has seen and must pursue.

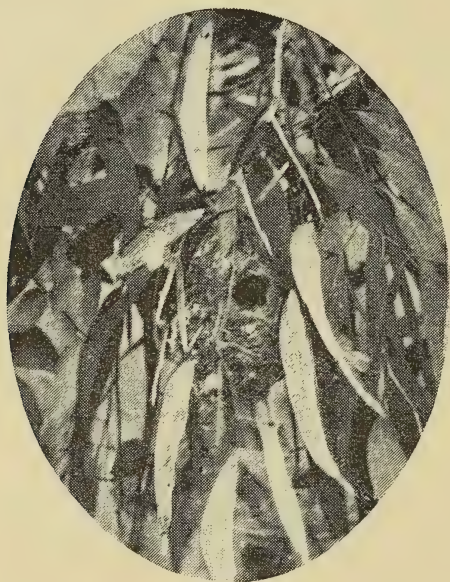


Fig. 11. Nest of Striated Tit. One-seventh natural size.

The nest of *A. lineata* is well woven, small in comparison with the unwieldy mass of *G. chrysorrhoea*, made of dry grass, and lined with brown and white hair of the cow. This is typical, but the divergence is as great in the material as with other species. The standard dome form, with side entrance, never varies, according to my knowledge of the matter. Only once have I been able to watch

for the times of laying of eggs. They were deposited on each successive day.

Nest.—Suspended, dome-shaped, and bearing a side entrance near the top that has an arch. It is made of soft bark, grass, with spiders' cocoons to decorate or cement it, and lined with feathers, hair, or available soft plant tissue.

Eggs.—Three to a clutch ; white, with a prominent zone of dull red spots near the broad end. Length, 0·75 inch ; breadth, 0·5 inch.

WHITE-SHAFTED FAN-TAIL,

***Rhipidura albiscapa*, Gld.**

Rip-i-dū'ra al-bī-scā'pā.

Rhipis, a fan ; *oura*, tail ; *albus*, white ; *scapo*, shaft.

RHIPIDURA ALBISCAPA, Gould, "Birds of Australia," fol., vol. iii., pl. 83.

GEOGRAPHICAL DISTRIBUTION.—Areas 2, 3, 4, 6, 7, 9.

KEY TO THE SPECIES.—Tail longer than wing ; the feathers of tail with white shafts except the two centre ones, which are brown ; under surface ochreous buff, the breast uniform ; throat white, with a black or grey patch on lower portion.

IN southern and eastern Victoria this is the most common fly-catcher, and no matter which creek you intend to follow you will certainly meet the "White-shafter." Like *R. rufifrons* it is a water-loving bird, though it never goes into it, and while one may be found on creek sides in tolerably open country, the other prefers the mountains and solitude. As you rest among the bushes the bird will astonish you by the absolute trust it places in a stranger. Why ! it will even attempt to alight on the gun while you

are endeavouring to procure it. A straight line in flight is seldom followed for any distance—rather a wavy nature, and every moment forming flight-angles. The call is a single “tinny” note at times, but at others it will break



Fig. 12. White-shafted Fan-tail, Nest, and Eggs. One-fifth natural size.

into an exquisite melody of varied notes. A nest of three nearly fledged young, with two inside, absorbing the whole interior, and the third on top, is a novel sight.

Nest.—Very small, open, compactly built of grass, densely cloaked externally with cobweb, and the base tapering considerably to resemble the middle portion of a wine-glass. The accompanying plate illustrates it.

Eggs.—Two, three, or even four to a sitting; ground colour creamy white, with or without a zone of nearly obsolete spots towards the broad apex. Length, 0·6 inch; breadth, 0·5 inch.

RUFOUS FAN-TAIL,

***Rhipidura rufifrons*, Lath.**

Rip-i-dū'rä ruf'i-frons.

Rhipis, a fan; *oura*, a tail; *rufus*, red; *frons*, front.

RHIPIDURA RUFIFRONS, Gould, "Birds of Australia," fol., vol. ii., pl. 84.

GEOGRAPHICAL DISTRIBUTION.—Areas 2, 3, 4, 6.

KEY TO THE SPECIES.—Frontal plumes, eyebrows, and bases of central tail feathers rufous for nearly two-thirds their length; fore-neck scaled in appearance, the feathers black broadly edged with white; head and neck brown; tail longer than wing.

THE common name of the species prevents any error being made in identification, because in Victoria there is only one rufous-like fan-tail. Apart from this, its habitat is in the hills that provide ample water supply throughout the year. In summer they leave their haunts and wander, if I may be allowed to use the term, almost anywhere their noses lead them, such noses always taking them long travels along the vicinity of a creek. Here follows an entry I recently made when having something to eat. While at lunch in Flinders Buildings, Melbourne, 1st March, 1899, one flew about from

picture to picture, along the lighter ornaments, and up to and along the ceiling. These birds seem to go on voyages of discovery at this time of the year, because the same morning I also saw one near the shipping at Williamstown, and heard of a second one being at Ascot Vale. The little bird of the dining hall has plenty of flies to catch, and if true to its name will do well for a time; but the trees in the oleographs are a city delusion. Fresh from the country, it has the coat of golden yellow, spruce and bright, and many admirers. Next week the carbonized dust will change the brilliancy of the youth—for such he must surely be, to come to the centre of a town. The sparrows will chirp on as usual, but he, poor fellow, will probably get as far as the Fitzroy Gardens, and there spend a semi-country life. These birds, strange to the city, arrive by following the little creeklets until they strike the beaches, and then along the beaches, following every little clump of private garden trees, till they are landed in the city proper.

Occupying similar country we have two species that are much rarer, *Myiagra rubecula*, Lath., Leaden Fly-catcher, and *M. nitida*, Gld., Satin Fly-catcher, while a third is comparatively even more rare, the Spectacled Fly-catcher, *Piezorhynchus gouldi*, Gld. This latter is seen only in the extreme east.

Nest.—Similar to *R. albiscapa* above, and, judging by one specimen alone, it is a little larger.

Eggs.—Two or three to a clutch; ground colour cream; the faint spots form a zone of pale brown and lilac-brown. Length, 0·75 inch; breadth, 0·55 inch.

BLACK AND WHITE FAN-TAIL

(SHEPHERD'S COMPANION, WILLIE WAGTAIL).

Rhipidura tricolor, Vieill.

Rip-i-dū'ra trī'kul-or.

Rhipis, a fan ; *oura*, tail ; *tres*, three ; *color*, colour.

RHIPIDURA MOTACILLOIDES, Gould, "Birds of Australia," fol., vol. ii., pl. 86.

GEOGRAPHICAL DISTRIBUTION.—Areas 2, 3, 4, 7, 8, 9.

KEY TO THE SPECIES.—Upper surface and throat jet black ; abdomen white ; tail larger than wing ; rectal bristles present.

THIS is perhaps the commonest of fan-tails. Wherever you go, across plains scantily timbered and fairly watered, or along well-watered country, you will be sure to meet this species. The preference shown is for the drier rather than for the wetter country, for while the Rufous-fronted species keeps principally to the mountain, and the White-shafted within fairly well timbered land, the Black and White Fantail is a companion of the sheep and their shepherd in grazing districts. The natives of south-western Australia tell me the bird is known to them as Chid-e, Chid-e, while other notes convey to us an expression like "sweet-pretty-creature." It is one of the few birds that sing, or attempt to do so, during the night. The mate to the sitting bird considers it a duty to periodically whistle through the dark hours, and many a time while camped for the night I have heard this solitary bar of notes through all the hours up to 3 a.m. Its flight is made of zigzag movements, very low and of short duration. To secure food it is very fond of accompanying animals, and one reason for seeing it near the head of a cow or horse seems to be a desire to get the insects that are attracted by the warm air expelled through

the animal's nostrils. It is fond of the ground, and makes a pretty picture wherever it may be.

Nest.—Very compactly built of grass, covered densely with spiders' webs, and taking the form of a shallow cup; the inner lining is of roots or finer grasses. The position

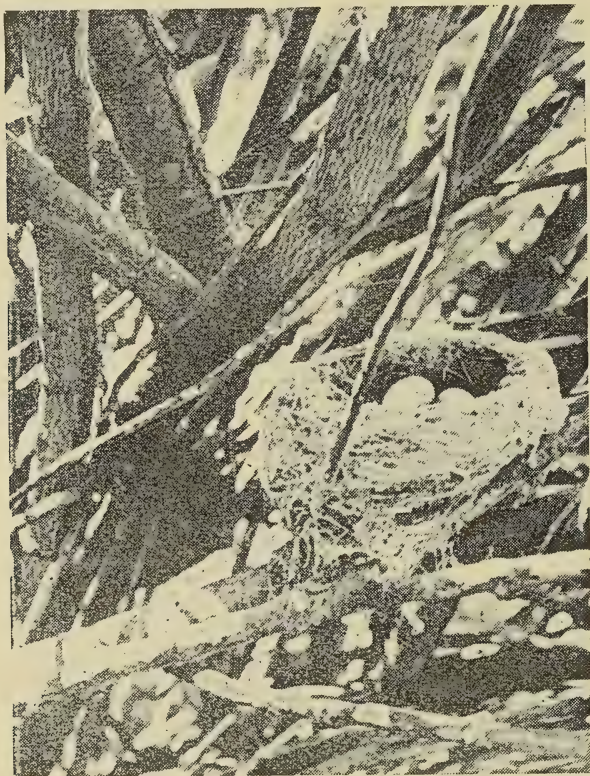


Fig. 13. Nest and Eggs of Black and White Fan-tail. Two-sevenths natural size.

varies with the nature of the tree or shrub. The figure above shows it in *Polygonum* near Lake Boga.

Eggs.—Three or four to a sitting; dull yellowish-white, with a zone of dark grey and blue-black. Length, 0.75 inch; breadth, 0.55 inch.

RESTLESS FLY-CATCHER

(SCISSORS GRINDER),

Sisura inquieta, Lath.

Sī-sū'rä in-qui'et'ä.

Seio, to shake ; *oura*, tail ; *inquietus*, restless.

SEISURA INQUIETA, Gould, "Birds of Australia," fol., vol. ii., pl. 87.

GEOGRAPHICAL DISTRIBUTION.—Areas 2, 3, 4, 6, 7, 9.

KEY TO THE SPECIES —Under surface white, no black on throat ; at times a rufous tint on breast ; upper surface shining bluish-black. Wing, 4 inches ; tail, 3 inches.

THERE appear to be two "Black and White Fantails" in Victoria. Such there certainly are, but until the fact that one has a black throat and the other a white one is noted they are considered one. Beyond this, the question of vocal differences come in for consideration. While this species is the "Scissors Grinder," the *Rhipidura tricolor* has a series of notes like "sweet-pretty-creature" uttered at lengthened periods. There are also other calls which may be heard principally in the spring season and in the stronghold of its habitat, the north-west of the colony. Mr. Gilbert speaks of its vocal powers in the following way :—

"The general note is a loud, harsh cry several times repeated. It also utters a loud, clear whistle, but its most singular note is that from which it has obtained its colonial name, and which is only emitted while the bird is in a hovering position at a few feet above the ground. This noise so exactly resembles a grinder at work that a person unaware of its being produced by a bird might easily be misled. Its mode of flight is one of the most graceful and

easy imaginable ; it rarely mounts high in flying from tree to tree, but moves horizontally, with its tail but little spread

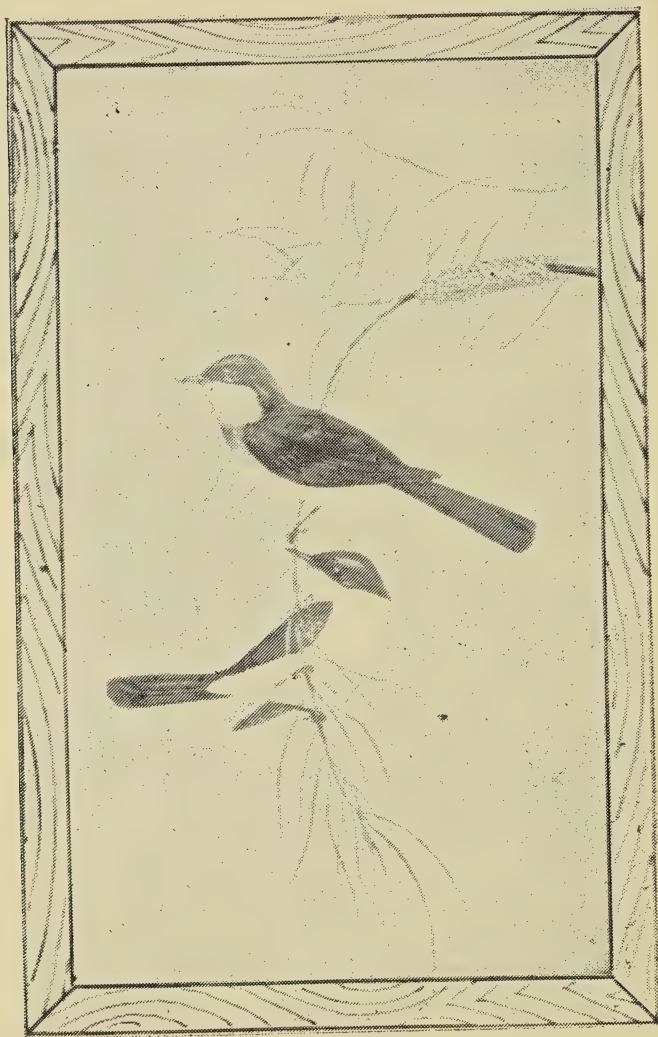


Fig. 14. Restless Fly-catcher. One-fifth natural size.

and with a very slight motion of the wings. It is during this kind of flight that it utters the harsh note above-mentioned, the grinding note being only emitted during

the graceful hovering motion. The object of this appears to be to attract the notice of the insects beneath, for it invariably terminates in the bird descending to the ground, picking up something, flying into a tree close by, and uttering its shrill and distinct whistle."

Nest.—In many respects it is like that of the last described (*R. tricolor*), differing principally in so far as less cobweb is used to encircle it. Cup-like and rounded; diameter, 2.5 inches.

Eggs.—Clutch two to three eggs; dull white, marked by spots of reddish and lilac-drab, the latter as if beneath the surface; much bulged in appearance. Length, 0.85 inch; breadth, 0.7 inch.

BROWN FLY-CATCHER

(STUMP-BIRD, PETER-PETER),

***Microeca fascinans*, Lath.**

Mi-kre'kü fas'i-nans.

Mikros, 'small; *oikos*, house; *fascino*, to charm.

MICRÆCA MACROPTERA, Gould, "Birds of Australia," fol., vol. ii., pl. 93.

GEOGRAPHICAL DISTRIBUTION.—Areas 2, 3, 4, 6, 7.

KEY TO THE SPECIES.—General appearance brown; abdomen and under tail coverts white; outer tail feathers entirely pure white; axillaries light brown; wings very long (3½ inches); distance between wing and tip of tail not exceeding length of tarsus; bristles at rictus.

If you watch this bird for a few minutes you will unmistakably say it is a fly-catcher, and you are not likely to confuse it with another brownish fly-catcher in Victoria,

because the tail is much shorter than that of the White-shafted (*Rhipidura albiscapa*, Gld). If it is one of the least ornamental birds in Australia there are some compensations. The graceful actions and pleasing voice make up for much that is absent, not to mention its charmingly small house, through which it has probably received its classical name. Passing flies have to run the gauntlet when approaching this species, because it generally waits for its prey in pairs. By waiting I mean that a given area of ground is worked as the birds perch on stumps, and when the time for attack comes they simply fly out, capture, and return to the same stumps for several times in succession. It also forages amongst the foliage accordingly as the weather is suitable or not. All day long a lateral movement of the tail is effected. The fascinating ways and the opportunity to note them and their nesting habits are so readily secured that you are drawn to watch it, and become interested also in its nest. One was built near a roadside, so prettily ornamented on that side, the one to view, that I feel inclined to maintain it has a sense of the beautiful. Passers by could easily observe the special uniform bark-lamellæ, whereas the other side, away from view, was devoid of taste and uniformity. If the eggs are extracted from a nest and not returned the bird will destroy the nest and with the same material rebuild elsewhere near at hand. Both sexes are gentle, and to remove a sitting bird you will often enough require to despatch sticks before dislodging what our boys at times call the "White Peter," or "White Robin." Although two eggs form the clutch, on three occasions I have noted four was the number in all, and in one case as late as 26th February, 1895. It was in a Cleopatra apple tree, and situated four feet from ploughed ground. October is the month for building.

Nest.—Open, rounded, shallow, and very small ; made of dry grasses and ornamented very often by bark-lamellæ. It is placed in a small horizontal fork, generally 6 to 10 feet from the ground. Diameter, 2 inches.

Eggs.—Two, sometimes three, or rarely four. There is much colour variation, but mostly dull green with reddish and lilac spots that have brown in them to blend the whole. Length, 0·75 inch ; breadth, 0·6 inch.

BLUE WREN

(SUPERB WARBLER),

Malurus cyaneus, Ellis.

Mā-lū'rus sī-ā'nē'us.

Malakos,* soft ; *oura*, tail ; *cyaneus*, dark blue.

MALURUS CYANEUS, Gould, "Birds of Australia," fol., vol. iii., pl. 18.

GEOGRAPHICAL DISTRIBUTION.—Areas 3, 4, 6.

KEY TO THE SPECIES.—*Adult male*—In summer nearly blue ; throat blue-black ; upper tail coverts black ; ear coverts and mantle turquoise-blue ; tail longer than wing ; bill about equal in height and breadth.

Adult female—Sombre plumage ; chestnutty bill and lores.

Young—Similar to female in the early phase.

THE genus *Malurus* is peculiar to the Australian continent, and no less than sixteen species are distributed through its various areas, of which seven are found in Victoria. These can be roughly divided into two groups, the red-backed and the black-backed, while two of the latter have

* *Mālos*, white, and *oura*, tail, seem to apply better, but as no species of this genus has a tail other than blue or blue-black it presents a contradiction.

a part of the wings and back white. As *M. cyaneus*, the common Blue Wren of Victoria, South Australia, and New South Wales, and *M. gouldi* are representatives of a very important section of destructive-insect eaters, I will give to them an extended notice. It is an extract from an article by the author in the *Victorian Naturalist*, 1899.

For at least some months of the year *M. cyaneus* is gregarious, that is to say, in small companies, preferring to keep within their individual family circles, or perhaps associating with another similar group. From the time the young birds leave the nest till the following spring they stay with the parents, and can be depended upon to be found in or about the same place. As a help towards keeping a family in view it is often possible to note a white patch on one of the parent birds, which thus enables that particular family to be watched. But if you would view the wren at home with its children you must be very quiet. Then only will you see the group, from six to twelve birds, travelling along the ground beneath the undergrowth, feeding and chatting as they go. Should the leading bird take to flight the others will follow in single file, and faithfully keep together, though perhaps the last of the colony may be a little late.

The late Mr. John Gould found a difficulty in attempting to mimic by words their melodious notes. There is first the grand oratorio of the male in spring, when he is leading a charming competitive life, followed by the notes of rollicking fun of the summer bird; and thirdly the series of thrilling squeaks when the young have ventured into a gambol among the boughs, which would be quite out of place in birds of maturer years. During nesting time the female will sometimes utter a call as if a tragedy were taking place. Blue Wrens are occasionally known to sing

at midnight, and they may frequently be heard about 9.30 p.m., as well as the Black and White Fan-tail and the Great Brown Kingfisher (Laughing Jackass). By July the young birds seem to have acquired the highest attainment in their



Fig. 15. Blue Wren—males, female, and young. One-fifth natural size.

musical efforts, though young wrens in captivity do not burst into song so soon as those of the adjacent bush.

These birds have wonderful appetites, and should be particularly useful to market gardeners. I have seen them

busily eating the small *Plutella* moths in the early morning when the dew was still upon the grass. At such a time one in a family will usually expand its body feathers and become almost spherical in appearance ; another will seem to rest lazily as much upon its tail as upon its feet, while the wings lie limp and disarranged. Under such circumstances the young show no fear, and leave all timidity to their parents. The staple articles of their diet seem to be grasshoppers, hard-winged insects, and larvæ. The persistent work of my correspondent, Mr. Geo. Graham, as a skilled keeper of wrens in captivity, in the providing of food, has proved that they are capable of disposing of eighty larvæ of the Cockchafer Beetle (*Anoplognathus*) daily for months in succession. As to food supplied—quantity, preference, &c.—it was noted that from July to the 1st of January, grubs with a little finely-chopped meat, bread crumbs, small beetles, and caterpillars formed the bulk of the food. It generally managed to dispose of sixty grubs, about a dozen small insects, and a small proportion of bread and meat, sufficient to equal the bulk of one hundred grubs as named above, per day. From 1st January to 1st April grasshoppers formed the staple, varied with March flies and cockroaches. The quantity devoured amounts to about the same as with the grubs, namely, 100 per day, and the immature form of the great green grasshopper is preferred to all other kinds of food given to it. Moths, March flies, and small winged insects are greedily devoured—in fact, it can stow away four large “blow-flies” on a fairly full stomach !

At the commencement of the breeding season the males show the greatest activity, for as many as five have been seen engaged in a pugilistic encounter to determine who should claim the favoured female. Nest-building usually

takes place in September, and the house is generally placed within three or four feet of the ground, occasionally in a thistle, but more often in some small bush. The period of incubation is 14 days, and the young fly from the nest on the eighth to tenth day, though sometimes remaining to the fourteenth. The brood of *M. gouldi*, the closely allied species, is usually three, consisting of one male and two females.

The following notes, though applying definitely to *M. gouldi*, practically pertain also to *M. cyaneus* :—

Mr. Graham observed for me that more than one adult male will attend the brood of nestlings. Three nests of young were brought from the forest and placed in three cages somewhat apart. Each nest had its female, which, in one case, was attended by three males, in the second two, and in the third one, all helping in the task of feeding the young. In the first-mentioned case this was observed before the nest was removed, and was continued for fourteen days after the removal to the new quarters, where the feeding was done through the wires. Considering the large number of female wrens, it seems probable that young females pass the first year without breeding. Unfortunately, broods of both species suffer much from the depredations of foxes. *M. gouldi* is hatched out on the fifteenth day from the time of the laying of the last egg. The eyes open on the sixth day, the wings are feathered and fairly fledged on the seventh to eighth days. The young birds are short-tailed when leaving the nest, the feathers rarely exceeding one inch in length. At the end of the first month the tail seems to have attained its full length. Young wrens are then able to catch flies and otherwise provide themselves with food, though they are still fed by the parents for another month or six weeks.

They seem to require teaching as to the manipulation of the bulkier items of their food. Last summer Mr. Graham watched a mother give a young bird a lesson. The latter was trying to reduce a large caterpillar to a condition fit for swallowing by beating it with the bill. After a few strokes, to show how it should be done, the mother would leave the young bird to finish. Sometimes the object would be picked up and handed over without further treatment, while at other times it would have to be repeated often before the food was finally ready for swallowing. I have observed these actions many times, and on one occasion I spent at least fifteen minutes carefully watching the method of procedure. After leaving the nest the young wrens, male and female, are alike in outward appearance till the fifth month, when the first moult takes place. After this the males are distinguished from the females, young or old, by their light blue tails. These remain the outward symbol of their sex till the second moult, in the tenth or eleventh month, when they assume the full plumage of blues and blacks, with a still darker blue tail. The bill also becomes a darker colour, and finally a jet black. It wears this spring and summer suit till the third moult, generally in February or early March, when the change is to grey for a season more or less prolonged. With the older males there seems to be no regular time for recovering their blues and blacks, as individuals can be found moulting the grey from the middle of April to the end of September. This season seems favourable to an early recovery of their blue dress, as at the moment (June, 1899) there are more coloured wrens than seen for many years. In August the family is disbanded, the males attacking and driving away the younger members of their sex, and the old females doing the same, though at a slightly later period. Another token

of the approach of the breeding season is the intense pugnacity of the mated males. From the time the young are driven off till long after the next brood is out all trespassing wrens of either sex are persecuted. In Mr. Graham's garden a male wren proved a nuisance. It was impossible to give the caged wren the benefit of air and shade outside. He was thus obliged to keep it indoors and cover the windows with fine wire netting so as to protect the caged bird from the incessant attacks of the free bird. Should he have neglected to have kept the door closed, and be looking into the cage to see how the changes of plumage were progressing, the tormentor was sure to fly past his head and hang on to the wire of the cage till driven away. Constant chasing seemed to make no difference. It never missed an opportunity for an attack. Its own nest being situated in a gooseberry bush just opposite the door, it was always ready to enforce what seems to me to be the law, that no wrens may come within a certain distance of the breeding-place. In wet districts October is the breeding month. In selecting a site for the nest the female is chiefly concerned with securing a place somewhat removed from other wrens. Ideal nesting-places are small detached portions of cover situated a short distance from the main cover, and all the better if they contain plenty of tussocky grass. When the young are old enough to make an outcry if disturbed is the time to see a display of pugnacity and courage on the part of the male. It does not flutter or utter alarm notes like the female, but goes silently and swiftly to the attack, with its little body crouched, its wings and tail depressed, and its blue mantle standing out like a ruff. It moves quickly along the twigs or over the ground after the manner of a mouse, making angry darts at the intruder till

it retires. Nest-building occupies the female a part of each of six days, and I have not been able to detect a male assisting in this work. A large overhanging tussock comes first in favour as a site for the nest; next, low prickly bushes. During incubation the female leaves the nest frequently to feed. The evening of the first day the young leave the nest is an anxious time for the parents. Much calling and persuasion is needed to get the young family to follow to a suitable perching place for the night. When this is at last accomplished, one may, with great caution, get a peep at them all in a row, with an old bird at each end. Low, dense, broad-leaved shrubs, eucalyptus trees if low, or dense masses of broad-leaved sword grass are the usual camps chosen. Young wrens seem to lose their early notes about the time they have fully acquired the song. July and August are the earliest months in which I have detected the young wrens practising the song, though to some it may come earlier than others. Besides the song there are the notes of alarm, harsh and quick, the low note of satisfaction uttered at every peck at an insect, especially when the family has alighted on a good patch, and sometimes, not often, a low, melancholy note uttered at each series of hops. In spring the males sometimes make a continued utterance of what is like half the usual song. One use of the song is to keep the family together and acquaint each other of their whereabouts. You may often see a wren which has been left behind mount the topmost twig of a bush and sing till answered from a distance. Then it will fly off in that direction and rejoin the others. Gould's Wren is not gregarious, though two or three females may hunt over each other's ground. They never join in a community like the tits and chats, but each family keeps, if it can, to its own particular

ground, and has its own special camp. Mr. Graham says : —“ In 1898 I wrote to you about three males attending a nest I had transferred to a cage, and about which I was making notes. The spring before (1897) I had noticed a similar case, so, when in August, 1898, I found a pair of males attending one female in a very isolated patch of cover, which could be easily seen, I determined to watch them right through. From the first it was evident that one male had the happy possession of the female, and that the other male was tolerated either because it could not, or would not, be driven away. When the female was on the nest the two males were apparently friendly enough, fed, hunted, and camped together. One day when I was watching a Magpie-Lark building its nest a female wren (a stranger) came into the tree. Both males at once attacked it. For five minutes their bills were chipping like shears, when the poor little female took flight for the nearest cover, pursued by both of its tormentors. When the young were hatched out, on the 28th of October, both males fed and attended to them, and right on to the present time (20th June) the partnership continues. This, being the third instance of such conduct in three successive seasons, leads one to assume it is not an isolated example. In June, 1897, I had completed the building of a large heap of logs preparatory to the burning, and I was intently watching the actions of a White-throated Tree-creeper, which, having secured an unusual prize, a meal-worm, was making a long task of killing it. Tree-creepers do not seem as expert at such work as other birds, for a robin would have finished it in a few seconds. There were some wrens about at the time, and one female, seeming as much interested as I was, twice sidled close up to the tree-creeper and was rewarded with a couple of sharp pecks in order

to make it mindful of its own business. After watching the tree-creeper for a few moments the wren made a sudden rush and fairly frightened the tree-creeper some inches away from its food. The wren quickly picked it up and flew away with it. This was clearly a feat of strategy, and happened on the heap of logs. My garden male wren is becoming quite shrewd, for it does not now mistake glass for space. If surprised when I come home, it makes a rush past me through the doorway, the result, I suppose, of its having been caught in the window so often and examined. I have a habit of feeding it and its family on a block by the door, and a few crumbs of cheese are sufficient to bring them to my feet. Last March I was using a kerosene tin to pick up windfall apples. Standing it by the door, I very soon saw the garden female wren come and perch on the edge of the tin and catch sight of a grub on the bottom. But how to get that grub was the trouble. It leaned over and hopped round the edge of the tin many times. It would like to go down to get that grub, but it looked too risky. Happy thought!—it would get down outside and get it. Down it went and hunted all round the tin, and seemed surprised it could not see the grub. Up again to the edge it got to see if it really was there. Yes, there it was; so down it went again and tried to insert its bill beneath the tin. Again it hopped up and feasted on the sight for some little time, and then retired from the grub-hunt in despair. Birds are commonly deceived in this way. As enemies, the Nankeen Kestrel during summer takes numbers of young, while the fox, that terrible bird exterminator, plays havoc in the breeding season. That wren is lucky which does not have to rear a second brood. At what age wrens start breeding I have no certain knowledge, and the large numbers of

wrens during spring and summer which have no other occupation than that of feeding themselves leads me to infer that the females do not breed during the first year. Male and female when once mated remain so until accident or the advent of a stronger or more pugnacious male causes a division. With regard to the proportion of males



Fig. 16. Nest of White-backed Wren. One-seventh natural size.

to females in the brood, I have not as yet observed more than one male in a brood of three. My garden wrens have just had the unusual brood of four, and still only one male, but to be certain of this point the families will require further watching." The males moult their blues for brown

in late summer as a general act, and procure a fresh set in early spring.

Nest.—Dome-shaped ; side entrance ; made of grasses, lined with feathers. Like all the wrens (Maluri) it places the nest near the ground.

Eggs.—Four or five to a sitting ; white with bright reddish-brown spots upon them, near or far apart, oftentimes forming a zone round the broad portion. Length, 0·65 inch ; breadth, 0·5 inch.

EMU-WREN,

***Stipiturus malachurus*, Lath.**

Stip-i-tu'rus mal'ā-kū'rus.

Stipes, a trunk ; *oura*, tail ; *malakos*, soft ; *oura*, tail.

STIPITURUS MALACHURUS, Gould, "Birds of Australia," fol., vol. iii., pl. 31.

GEOGRAPHICAL DISTRIBUTION.—Areas 3, 4, 5, 9.

KEY TO THE SPECIES.—Tail of emu-like feathers ; head light rufous, broadly striped with black towards the nape. Male has throat light blue, female rufous. Tail, $4\frac{1}{2}$ inches ; total length, $6\frac{1}{4}$ inches.

THIS tiny bird, with a body only $1\frac{3}{4}$ inches long, is fairly plentiful in the swampy lands with rank grass through them. Especially does this refer to Gippsland. It trusts more to creeping and running among the bushes rather than to flying. As a matter of fact its wings are ill-adapted for this purpose, and when you visit the class of land it inhabits you will at once recognize that it must be half its time unable to fly. This is owing to the saturated state of the leaves causing its plumage to be too damp for

active flying. Its voice is a make-up of notes that approach a twitter more than a song, which is not to be compared with that of the Blue Wren.

The breeding months are September and October, and it is surprising that no eggs are found later in the season. Certainly they are rare at any time. In this group are



Fig. 17. Emu-Wren, male and female. One-fifth natural size.

other genera that are rare in Victoria. The Grass-Wrens (*Amytis textilis* and *A. striata*) are occasionally found in the dry north-west of the colony, occupying dry rank grasses. *Megalurus* (Grass-bird) is a common denizen of the swamps. Possibly the rarest of all this group is the Rock-Warbler (*Origma*). With the advance of civilization

the Emu-Wrens will find their swamps reclaimed, and they will need to go further east, which for them will be a stronghold for a century and many generations. Mr. Howitt tells us "the men of the Kurnai tribe used to regard the Emu-Wrens as their brothers, and the women of the tribe the Blue Wrens as their sisters." The black brother and sister have almost gone, the brown brother has his days numbered, but the blue sister will remain while a rural aspect exists.

Nest.—Dome-shaped and made of grass. It is much more compact than that of the Blue Wren (*M. cyaneus*); better finished, and much more artfully concealed in the grass and scrub. (G. E. Shepherd, *Victorian Naturalist*, xiv., No. 10.)

Eggs.—Three to a sitting; similar to those of *M. cyaneus*, described above, but much smaller. [Length, $6\frac{1}{2}$ lines; breadth, $4\frac{1}{2}$ lines.—Ramsay, "*Ibis*" (1863).]

BLACK-FACED CUCKOO-SHRIKE

(BLUE JAY, BLUE PIGEON),

Graucalus melanops, Gld.*Grá'ka-lus mel-a-nops.*

Graucalus, a perversion of *graculus*, a jackdaw; *melas*, black; *ops*, a face.

GRAUCALUS MELANOPS, Gould, "Birds of Australia," fol., vol. ii., pl. 55.

GEOGRAPHICAL DISTRIBUTION.—Areas 1, 2, 3, 4, 6, 7, 8, 9.

KEY TO THE SPECIES.—*Adult*—Upper surface grey; throat, sides of face, feathers round eye, and forehead black; fore-neck and breast grey, shading into white on abdomen and under tail coverts. Bill broad, measured at gape equals outer toe without claw; culmen, 1 inch.

Young—Throat and forehead grey.

THE graceful wave-like flight of this species will always attract your eyes when the bird is upon the wing, or, if at rest, the composed posture and quiet chatter of one or more of the family are sure to interest you. Upon return in September from their migratory tour the flock plays very much among the trees, passing from one to another in the gentlest of manners, till the party breaks up for the purpose of nest-building, and, possibly, more serious thoughts. The birds then become sedately quiet, and one will remain upon a branch for hours while its sitting mate is upon the nest. In the heat of the day the *Graucalus* always rests amongst the foliage. The notes of the bird are similar to those of the Oriole, neither of which are describable, unless as Gould has it, "a peculiar purring or jarring sound uttered several times in succession, and, as a whole, given at long intervals." The vernacular name is rendered, I venture to state, because of its likeness on one

side to the cuckoo in flight, and on the other to the shrike in bill. The food of the bird is very varied—insects, their larvæ, ants, &c. From the stomach of one I extracted more than 100 ants similar to the “sugar” kind, popularly



Fig. 18. Black-faced Cuckoo-Shrike—Phases of plumage.
One-fifth natural size.

known as the stingless section; among them were two large specimens of the Coccinellidæ. In referring to this species that celebrated naturalist, the late Mr. Gould, says: —“When the young, which are generally two in number,

leave the nest the feathers of the body are brown, margined with light grey. This colouring is soon exchanged for one of a uniform grey, except on the lower parts of the abdomen and under tail coverts, which are white, and a mark of black which surrounds the eye and spreads over the ears. The throat and forehead in this shape are lighter than the remainder of the plumage, which is somewhat singular, as in the next change that takes place those parts become of a jet black. This colour, I believe, is never afterwards thrown off, but remains a characteristic of the adult shape of both sexes. The infinite changes of plumage which some of the Australian members of this genus undergo from youth to maturity render their investigation very perplexing. I have done my best to define them correctly; if I have committed some errors let us hope that a son of the great southern land may be imbued with a sufficient love for natural science to pay attention to the subject and place it in a truer light."

The writer considers there is still room for further observation on this genus, and trusts the hope of the great naturalist will yet be fulfilled.

A second species numerous in Victoria is the following species—the Little Cuckoo-Shrike.

Nest.—Small, flat, and closely fitted to the fork of a horizontal bough. It is made of grasses, and externally covered with cobwebs to make the nest resemble the grey surroundings. You need to see the bird fly away to discover it for the first time.

Eggs.—Three, sometimes two, to a sitting; ground colour dull olive, with chestnut-brown spots boldly appearing on the surface, and dull lilac-red spots as if beneath the surface. Length, 1.25 inches; breadth, 0.9 inch.

LITTLE CUCKOO-SHRIKE

(VARIED GRAUCALUS),

Graucalus mentalis, Vig. and Hors.

Gră'ka-lus men'tal'is.

Graucalus, a perversion of *graculus*, a jackdaw ; *mentalis*, of the mind.

GRAUCALUS MENTALIS, Gould, "Birds of Australia," fol., vol. ii., pl. 56.

GEOGRAPHICAL DISTRIBUTION.—Areas 1, 2, 3, 4, 6.

KEY TO THE SPECIES.—*Adult*—General appearance greyish-white ; throat and breast grey ; lower part of abdomen and under tail coverts pure white ; thighs slaty-grey ; hinder rim of eyelid white ; bill broad.

Young—During the first few months the throat, chest, and back of neck are jet black ; the white chest and abdomen are rayed with obscure arrow-shaped markings on a white ground.

IN size it is smaller than *G. melanops*. In habit it is much the same. The species has an extensive range through the continent and it is not by any means an uncommon bird. As an insectivorous member it is in every way a useful bird, keeping in subjection those species that would, without such means, become too numerous. Occasionally it will give trouble when the fruit is ripening. Considering the distinct service it renders as an insectivorous bird, this should not be placed to the discredit of the species. It nidifies in the months of October, November, and December.

Nest.—In all respects like that of the previous species. Large eucalypt trees are chosen where possible, though a nest is occasionally placed in smaller trees, as the *Banksia*.

Eggs.—Three to the clutch ; ground colour heavy green, with spots of violet-grey, appearing fainter than some reddish spots. Length, 1.25 inches ; breadth, 0.75 inch.

WHITE-SHOULDERED CATER- PILLAR-EATER

(WHITE-SHOULDERED CAMPEPHAGA),

Lalage tricolor, Swains.

Lal'-ā-jē tri'kul-or.

Lalage, prattle ; *tres*, three ; *color*, colour.

CAMPEPHAGA HUMERALIS, Gould, "Birds of Australia," fol., vol. ii.,
pl. 63.

GEOGRAPHICAL DISTRIBUTION.—Areas 1, 2, 3, 6, 7, 8, 9.

KEY TO THE SPECIES — *Male*—Under surface, under wing coverts, under tail coverts, and ear coverts white ; upper wing coverts pure white ; upper surface black ; tail feathers black, outermost two with white tips.

Female—Brown above, white edges to rump and tail ; cheeks and throat whitish ; buff edges to wing coverts ; under surface yellowish, with obscure cross markings ; under tail coverts white ; wing 5 inches in length, tail 4 inches.

THERE is a general resemblance between the male of this species and the male of the Hooded Robin. The Campephaga (*i.e.*, eater of caterpillars), is slimmer, longer in the body, and more energetic, though not so graceful in its habits. It is migratory, appearing in September, and leaving for Queensland in February. The notes are loud and pleasant, and may be termed a song. While in pursuit of insects it will hunt along the ground, among the trees, or upon the wing. Immediately upon their arrival in spring both sexes indulge in an active gambol among the trees, and very soon settle to nest-building and the rearing of a family of two.

The two other species of Caterpillar-eaters are rare in our colony—the Pied and Jardine's.

Nest.—In all cases a very small and shallow structure—often a flimsy one—made of grasses, and partly covered with cobwebs; placed upon a horizontal bough, or, more rarely, in a fork.

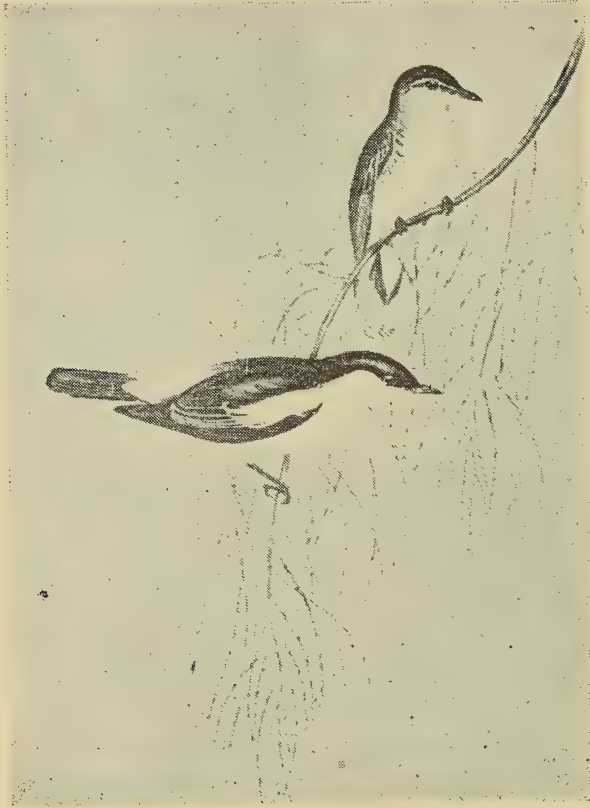


Fig. 19. White-shouldered Caterpillar-eater, male and female.
One-fourth natural size.

Eggs.—Two or three eggs to a sitting; light green, with chestnut-brown or wood-brown spots and blotches. Length, 0.75 inch; breadth, 0.6 inch.

RUFOUS SONG-LARK,

Cinclorhamphus rufescens, Vig. and Hors.

Sing-klō-ram'fus rō-fes'ens.

Kigklos, a bird ; *rhamphos*, a curved beak ; *rufescere*, to redden.

CINCLORAMPHUS RUFESCENS, Gould, "Birds of Australia," fol., vol. iii., pl. 76.

GEOGRAPHICAL DISTRIBUTION.—Areas 1, 2, 3, 4, 6, 7, 8, 9.

KEY TO THE SPECIES.—General appearance rufous-tinted ; throat and abdomen whitish ; upper tail coverts rufous ; inner secondaries nearly equal the primaries in length.

It will come as a surprise to many of us to know that we have Song-Larks in Australia. Not only so, but strongly stationed upon the inner shores of Hobson's Bay we also have the British Singing-Lark, a highly favourable introduction. Certainly our two species do not equally compare with the bird of the fatherland, because their song, though strong, is not so rich or so prolonged. Although we generally call the Cinclorhamphi the Song-Larks, there is another in most parts of southern and western Victoria more worthy of the name. I refer to the Bush-Lark or Pipit-like bird (*Mirafra*). While the Cinclorhamphus sings in the day, the *Mirafra* sings in the night. Mr. North says it is the only Australian bird that does so, while Mr. Gilbert champions the cause of the Long-billed Reed-Warbler (*Acrocephalus*).

The second species of the genus is the Brown Song-Lark, a bird of more heavy build and darker plumage. The sexes differ very much in size. Both mount into the air, but it is the male that sings so enthusiastically when his mate is beneath upon the nest. It is a pleasant sight to see the tremulous mount made high into the air, and to

hear the rich and voluble activity of the bird. Such a flight may be maintained for a long time, or the bird may prefer to make several voyages, coming each time to one or other tree in the vicinity of its nesting mate.

It is what we call a migratory bird, going north a few hundred miles after summer and returning south with the



Fig. 20. Rufous Song-Lark, male and female. One-fifth natural size.

early notices of spring. In Northern Victoria it will breed from September on to November, in the southern portions from October to December.

Nest.—A small cup-shaped structure, made of grasses, and placed in a slight depression of the ground. This may be covered with bushes or grass as a protection.

Eggs.—Clutch three, or possibly four; pale purple-white, with spots of chestnut evenly and freely distributed over the whole surface. Length, 0·75 inch; breadth, 0·6 inch.

WHITE-THROATED THICKHEAD,

***Pachycephala gutturalis*, Lath.**

Pak-i-sef'a-lä gut'u-räl'is.

Pachys, thick; *kephale*, head; *guttur*, throat; *alis*, pertaining to.

PACHYCEPHALA GUTTURALIS, Gould, "Birds of Australia," fol., vol. ii., pl. 64.

GEOGRAPHICAL DISTRIBUTION.—Areas 2, 3, 4, 5, 6.

KEY TO THE SPECIES.—*Male*—Under surface rich yellow; pectoral collar jet black; throat white; head black; only terminal part of tail black, basal part grey washed with olive.

Female—Throat pale brown, with white spots; under parts buff, without streaks; under wing coverts whitish; general colour above, head, neck, upper tail coverts, and tail olive-brown; wing coverts and secondaries blackish-brown, edged with reddish-brown; primaries edged with grey; bill stout and black.

Young—Uniform grey.

Fledgling—Rusty colour, lighter brown on wings.

"THE *Pachycephala gutturalis* may be regarded as the type of this genus, the members of which are peculiar to Australia and the adjacent islands to the northward. Their habits differ from those of most other insectivorous birds, particularly in their quiet mode of hopping about and traversing the branches of the trees in search of insects and their larvæ. Caterpillars constitute a great portion of their food."

This was that great ornithologist, Mr. John Gould's,

impression of the representative species under present notice.

As described by the writer recently before the Royal Society of Victoria, the species has three phases of plumage,

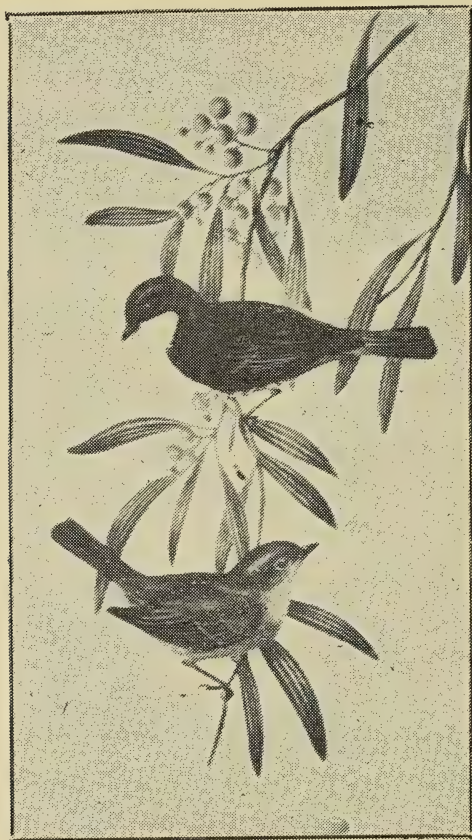


Fig. 21. White-throated Thickhead, male and female. One-fifth natural size.

very distinctly different to each other—(a) rufous ; (b) grey ; (c) yellow, white, and grey. My correspondent, Mr. Geo. Graham, now corroborates what I there expressed by closely observing the male grey bird of the nest as under

to have a trace of the black pectoral collar only and the merest speck of abdominal yellow. The male of this pair of breeders, when first seen, while selecting a covert in which to build (10th October approx.), appeared uniform grey and darker upon the crown. The pectoral collar could only be faintly distinguished on the 10th of December. To watch a pair that is not in nuptial plumage is easy and pleasant work when it has selected the portion of dense covert it intends to occupy with a nest. Like many birds, they have a way of letting you know the place is sacred to them for a season.

NESTING HABITS.

Observation I.—September–October, 1899. Heytesbury, Victoria.

25th September.—First egg laid in nest.

26th September.—Second egg laid in nest

12th October.—Young hatch out, having a little reddish down on body.

16th October.—Grey quills rise from wings, tail, and along ridge of back.

20th October.—Rufous feathers growing rapidly on wings and back.

21st October.—Eyes of young open ; feathers forming on breast and neck.

23rd October.—Young leave nest ; feathers formed on crown.

Observation II.—October–November, 1899. Heytesbury, Victoria.

15th October.—Building of nest commenced. the female alone doing the work from start to finish.

28th October.—Nest completed and first egg deposited in it.

29th October. — Second egg laid.

14th November. — Young birds hatch out of shells.

23rd November. — Eyes open.

25th November. — Young leave the nest.

29th November. — Young birds are separated, each parent taking charge of one and exclusively feeding it. The wings have assumed a darker colour.

The male alone feeds its charge, the female doing the same with the other young bird. The young come to receive food at the calls of the guardians, each obeying the call of its particular one. No cross purposes seem to be entertained as regards food.

A young bird from a nest at Box Hill, when caged, for twelve days following freely caught flies upon the bars of the cage, largely living upon them in preference to still food supplied.

A phase of this first plumage is the throat of the rusty-brown bird becoming greyish-white (February, 1897), while, from what I have seen in the field, another phase when handled would, I believe, show the throat to be rusty-brown—the second last place (wings last) to remain rusty-brown in the complete change from phase 1 to phase 2. An example of the February phase of bird above was held under observation by Mr. Graham until 25th July, losing sight of it between the 18th and 25th July. This inclines me to believe that the rusty-brown or first plumage is retained for more than six months, and that it gives way to the grey, or second phase, in time for the first breeding season—a season of immature and very modest plumage. The want of competition, surely, is the male bird's champion! Phase 3, of a male that must be at least two years of age, is an elegant one. Also I met one on the Bass River in December, about 1894, that was quite an exception to

“bright plumage indicating weak powers of song,” for it had so wonderful a voice that when I heard the ringing music I felt entranced. Although years have passed, so delightful was it the song still seems to ring with the full enjoyment of that time. I met during the same week with a second specimen of this bird with phenomenal voice at Lang Lang, but only on those two occasions have I heard the strong, sweet, clear, and regular series of running notes. Judging from specimens seen in June and July, it is a winter resident of the southern portions of Victoria.

Nest.—Neatly but loosely made saucer-shaped structure of dry grasses and rootlets, with lining of finer material; placed in forks of scrub, and a few feet only from the ground.

Eggs.—Three eggs to a sitting; ground colour varies considerably, from a creamy white to the ordinary brownish-buff, over which are dark brown with paler lilac spots, as if beneath the surface; a zone is formed at the broader end. Length, 0.95 inch; breadth, 0.65 inch.

RUFIOUS-BREASTED THICKHEAD,

***Pachycephala rufiventris*, Lath**

Pak-i-sef'a-lä ruf'i'ven'tris.

Pachys, thick ; *kephale*, head ; *rufus*, red ; *venter*, abdomen.

PACHYCEPHALA PECTORALIS, Gould, "Birds of Australia," fol., vol. ii., pl. 67.

GEOGRAPHICAL DISTRIBUTION.—Areas 2, 3, 4, 6, 7, 9.

KEY TO THE SPECIES.—*Male*—Throat white ; under surface orange-brown ; ashy-grey above ; bill at nostrils equal in height and breadth.

Female—Throat and cheeks white with dark brown streaks ; under parts light fawn, distinctly streaked on breast ; lores and ear coverts ashy-brown.

In the naming of this bird brain power was not considered. The noticeable breadth of the cranium provided the original idea. In habits it is very much the same as the previous species, though it spends much of its time away from creeks, and breeds, as a rule, in the saplings of dry places. In this respect it differs from *P. gutturalis*. The note of the bird is terminated by a smack as if made with a whip. In this particular it is similar but much inferior to the "Whip-bird" (*Psophodes*). Although a winter resident it is nomadic, passing from place to place with its young, which do not mature for at least two years.

A similar species, occupying the fringes of the Mallee country, is Gilbert's Thickhead, *P. gilberti*, Gld. It has a rusty-red throat and sandy-buff under wing coverts. A further plain-coloured species is found in the moist and heavily timbered lands of the colony—i.e., *P. olivacea*, V. and H. It has a whitish throat, freckled with brownish, dull fawn below and olive on the upper surface.

Nest.—Almost identical with that of the preceding species.

Eggs.—Basal colour after the nature of olive ; a zone of spots of a similar shade (stronger) around the broad end. Three to a sitting. Length, 1 inch ; breadth, 0·8 inch.

GREY SHRIKE-THRUSH

(HARMONIOUS SHRIKE-THRUSH),

Collyriocincla harmonica, Lath.

Ko-lir'i-ō-sing'kla här-mon'i-kä.

Collurion, a thrush ; *kigklos*, a bird ; *harmonicus*, musical.

COLLURIOCINCLA HARMONICA, Gould, "Birds of Australia," fol., vol. ii., pl. 74.

GEOGRAPHICAL DISTRIBUTION.—Areas 2, 3, 4, 6, 7.

KEY TO THE SPECIES.—General appearance grey ; bill blackish ; back umber-brown, contrasting with grey head and rump ; bill stout, 1 inch long ; white loreal spot very distinct ; no distinct eyebrow in adult ; second primary longer than secondaries.

WE have with us Song-Thrushes, Ground-Thrushes, and Shrike-Thrushes, and the most useful of all is the species under review. Of Shrike-Thrushes there are nine species in Australia, two of them being in Victoria. They are mostly tropical. *C. rectirostris* is found only in Tasmania.

The Grey Shrike-Thrush stays close to well-watered lands during the summer, and with the autumn its notes are heard close to the towns. The generic name has been quite truly applied, *collyriocincla* meaning thrush, or possibly a second construction, "a particular kind of bird that has one note distinctly and boldly given." But it has a rich, sweet voice as well, and for that reason it earned in past times the name of *harmonica*. If, while you are in the bush, you hear

a rustling noise among the light branches of the timber, you will in all probability be safe to assign the cause to the Grey Shrike-Thrush, as the effect is so different to that caused by small birds in the scrubby creek land. It is



Fig. 22. Grey Shrike-Thrush and Nest. One-fourth natural size.

heavy-footed and seems careless. The size and awkwardness appear out of place amongst the quiet of the matted vegetation of a humid Gippsland gully.

I once heard a naturalist say he hunted high and low for small worms and insects in the gullies near Walhalla and

was unsuccessful. Thanks to the Thrush, for it is the police bird of these same gullies, keeping in subjection the snails and other vermin that quickly disturb the balance of nature when opportunity arises. The watchfulness of the bird applies as well to hundreds of hillsides upon which fruit trees have in recent years been planted. This creek-loving species is at all times to be observed. It has a varied taste, and any creeping thing does not come amiss. It tugs away at a cluster of woven leaves till the hidden spider's nest or that of certain caterpillars is dissected, or carefully pries into any suspicious-looking corner that is likely to harbour a good-sized beetle. Among many curious forms, a young lizard in good order, and in length two inches, I drew from the gizzard; it evidently had been a late find. The usual nest is described below, but on two occasions on the 25th of November, 1894, two nests each contained eggs, and were neatly lined with mud, as if done with a trowel and an instrument for making the spherical form. There is a great likeness to the nest of the introduced Thrush in this particular build. November gave the majority of nests containing fresh eggs. As late as January, on Phillip Island, a peculiar nest was described to me by Mr. C. Gabriel. The nest was on the sea beach, just four feet above high water and at the edge of the bank. The birds could fly out of the nest just as if it was that of a Pipit. It was not strongly built, and contained three young, which were taken away some distance (50 yards). The birds followed and objected, and when the young were returned one parent immediately settled upon them with great joy. Nests may be placed in stumps of trees, in large hollows, or in a tangle of twiners. It is cup-shaped, made of bark, roughly speaking, and just sufficiently large to accommodate the sitting bird.

A species closely allied, but comparatively rare, is *C. rufigaster*, Gld., the Rusty-breasted Shrike-Thrush.

Nest.—Cup-shaped and deep, composed of bark and fibres, and placed among twining plants, or in the hollow of a tree-spout, or even in the bole. The illustration shows a spout nest.

Eggs.—Four to a sitting; ground colour clear white, with spots of chestnutty-brown and bluish-grey upon them. The spots and blotches may vary considerably in their density and their disposition. Length, 1.1 inches; breadth, 0.85 inch.

SPOTTED BABBLING-THRUSH

(SPOTTED GROUND-THRUSH, GROUND-DOVE),

***Cinclosoma punctatum*, Lath.**

Sing-klō-sō'mä punkt-ā'tum.

Kigklos, a bird; *soma*, a body; *punctatus*, dotted.

CINCLOSOMA PUNCTATUM, Gould, "Birds of Australia," fol., vol. iv.,
pl. 4.

GEOGRAPHICAL DISTRIBUTION.—Areas 3, 4, 5, 6, 7.

KEY TO THE SPECIES.—*Male*—Throat and narrow band across chest steel black; forehead and chest ashy-grey; crown of head black; rump and inside tail feathers rufous brown; shoulders and wing coverts steel black, each feather with white spot at tip.

Female—Throat greyish-white instead of black; no black breast-band; spot on neck rufous instead of white.

TRUE Babbling-Thrushes are remarkable for their strong, clumsy feet and powerful rounded wings, and not so much as a whole for their powers of babbling. The Australian

members of the group (Crateropodes) are a rather silent set, but they answer exactly to the structural description.

The Spotted Babbling-Thrush is the common species in southern and eastern Victoria, while the Chestnut-backed species is the most numerous in the north-west. A third species, *C. cinnamomeum*, Gld., is associated in comparatively small numbers with the latter bird. No one species can be said to be common anywhere. At all times the bird is shy and keeps to scrubby timber. It performs a similar service to mankind that the Ground-Lark (Pipit) does on the adjacent open, and the Plover on the common beyond. All feed upon terrestrial insects, and help to maintain the balance of nature perfectly. To absolutely prohibit bird friends from frequenting the environs of your "lease" would mean to cultivate your insect enemies a thousandfold, and to eventually assign it all to them. Vegetable and mineral poisons solely used in the subjugation of noxious insects prove enormously expensive when the birds' labour charge has been compared.

This species associates in small flocks or in pairs upon the ground, in the vicinity of gravel beds where present, and when it rises for flight the course is an undulatory one. In April little flocks are seen—some fifteen to twenty birds assembled. It is much more difficult to secure than a quail. If a species of the latter rises, it does so near you, and the experienced gunner kills the bird; but the thrush, which flies also quickly, with a burr, rises so far ahead that a shot, fired otherwise than at random, serves only the purpose of frightening other birds and disturbing the general peace. The nest is placed upon the ground, and the complement of eggs is two. In November I have found them, with the assistance of the sitting bird, for it will leave the nest as you approach, feigning a broken wing, as adopted by many other

ground birds, including the European Lapwing. The White-fronted Chat is a well-known Australian example.

The Mountain-Thrush, *Geocichla lunulata*, Lath., is a bird of similiar habitat, showing a preference for moist land, such as near creek banks. It is well distributed, and is the most familiar of the three species known on this continent. The nest is a bulky one, placed off the ground, and the eggs are laid as early as July, in or without the company of the Lyre-bird of moister districts.

Nest.—Placed upon the ground, and mostly in a slight depression. It is cup-shaped and made of grasses.

Eggs.—Two or three for a sitting; white, with large brownish marks upon them, varying in intensity, with some as if beneath the surface. Length, 1.3 inches; breadth, 0.9 inches.

WHITE-BROWED BABBLER

(CHATTERER, CAT-BIRD),

Pomatorhinus superciliosus, Vig. and Hors.

Pō'-ma-to-rī'nus sū-per-sil-i-ō'sus.

Poma, a lid; *rhinus*, nostril; *super*, over; *cilium*, eyelid.

POMATORHINUS SUPERCILIOSUS, Gould, "Birds of Australia," fol. vol. iv., pl. 22.

GEOGRAPHICAL DISTRIBUTION.—Areas 1, 2, 3, 4, 6, 7, 9.

KEY TO THE SPECIES.—Distinct white eyebrow; lower breast whitish, without any rufous; forehead and crown brown; culmen long, and longer than tarsus; wings rounded ($3\frac{1}{2}$ inches long).

It is characteristic of certain species of birds to be gregarious. In this disposition there are ways employed that vary greatly from one another, such as those of the Crow,

Martin, and Quail. The manner of life of the Babblers differs from most birds, yet agrees with that of the Grey Jumper (*Struthidea*) or Chough (*Corcorax*). All are noisy. Each associates in a number, from 6 to 10, and the three genera, very dissimilar in form, are ground-loving



Fig. 23. White-browed Babbler. One-fifth natural size.

birds, even though they are correctly termed "Passeres" or "Perchers" because of their structure. The power of flight of the Babblers is very limited, and its great use is to convey the birds from the top of one sapling to the bottom of another. The company talks a great deal, hops over the ground energetically, and when disturbed jumps from bough

to bough until each has got well up the young tree. They never seem to rest a minute. With the wing and tail well spread, and carried much above the plane of the back, a group presents a strange sight, and one quite peculiar to the genus. When disturbed the notes of the birds become very much mixed in a harsh jumble. The comparison with the mew of the cat is not nearly so good as with that of the Cat-bird (*Aeluroedus*) of New South Wales. In Victoria there are two common species of Babblers, this and *P. temporalis*. While the former is located chiefly in the north-west, the latter is in the south-east. The third species, *P. ruficeps*, Hart., is more a border bird and a visitor. *P. temporalis* has been called the "Codlin-moth eater." In any case it is a most useful friend to the cultivators of introduced fruit trees.

The nesting habits of the genus are comparatively strange. About half a dozen nests are built before eggs are laid in the final one, and it is a very great advantage to the birds in adopting this means, perhaps unconsciously, for the preservation of their eggs.

The flock assist one another in building, and three to five eggs are laid by each pair.

Nest.—Rugged appearance, large and spherical, with side entrance, spouted; made of twigs and lined with grasses, &c.; situated in a small tree.

Eggs.—Four eggs generally to a sitting; pale brown, with peculiar cobweb or hair-like lines irregularly placed upon them. Length, 1 inch; breadth, 0.35 inch.

STRIATED FIELD-WREN,**Calamanthus fuliginosus, Vig. and Hors.***Kal'a-manth-us fū-lig'i'no'sus.*

Calamus, a reed ; *anthus*, a small bird ; *fuligo*, soot ; *ous*, denoting "presence," fulness.

CALAMANTHUS FULIGINOSUS, Gould, "Birds of Australia," fol., vol. iii., pl. 70.

GEOGRAPHICAL DISTRIBUTION.—Areas 4, 5.

KEY TO THE SPECIES.—General appearance olive-green, much streaked ; head olive-green, streaked with black, like back ; breast, sides of body, flanks, and under tail coverts streaked with black ; secondaries about equal.

IN Victoria there are two Field-Wrens (*Calamanthi*) very much alike, but the second not only differs in having a nearly uniform rufous forehead, but in having its distribution over the inland parts, where it is known as the Field-Wren (*C. campestris*).

The Striated Field-Wren prefers the marshy low growth of the sea border to the rough grassy flats of the interior. Between Grantville and the southern part of Lang Lang it is plentiful, and nearer Melbourne — *i.e.*, between Yarraville and Altona—you may at almost any time obtain a variety of skins if they are needed for scientific purposes. The bird from a little bush-top sings sweetly, merrily, and continuously, with its brownish tail erect and restless. The tail appears by its movements to be an extraordinary appendage to the bird, for, besides other actions, you learn its intended course of flight by the placing of the tail in the opposite direction to that course which it intends to pursue. Certainly one action is quickly consequent upon the other, but, for example, unlike the Blue Wren in its manner of

set-off, that of lowering its long tail to the plane of its body on the first flight motion.

As an insectivorous bird it functions in the sour lands. Although this rank grass, such as may be found along the south-eastern coast, may appear of small commercial value, it is important that these breeding grounds of noxious insects be patrolled by the Calamanthi.



Fig. 24. Field-Wren. One-fifth natural size.

Nest.—Cup-shaped and made of grasses, with a light feather lining within it. It is placed in damp ground at the foot of a bush or tussock. This species breeds during the coldest months of the winter.

Eggs.—Three to the clutch ; much bulged in form, and having a colour varying between a reddish-brown and a chocolate, and faintly spotted towards the larger end with a colour closely assimilating. Length, 0·75 inch ; breadth, 0·55 inch.

WHITE-BROWED SCRUB-WREN

(WHITE-FRONTED SERICORNIS),

Sericornis frontalis, Vig. and Hors.

Ser'i-kôr'nis fron'tal'is.

Serikos, silken ; *ornis*, bird ; *frons* (*frontis*), front ; *alis*, pertaining to.

SERICORNIS FRONTALIS, Gould, "Birds of Australia," fol., vol. iii.,
pl. 49.

GEOGRAPHICAL DISTRIBUTION.—Areas 3, 4, 6, 7.

KEY TO THE SPECIES. —General appearance sombre ; plumage silky ; throat white, with black spots or edgings to feathers ; tail square, with no distinct subterminal band ; no white tips to tail feathers ; wing coverts black, tipped white ; a white spot over lores ; under tail coverts pale yellowish ; tarsus plain.

OF the eleven species of Scrub-Wrens (*Sericorni*) we have six in Victoria, the one under review being a typical warbler. Notes on the Warblers can hardly be called complete without a few remarks on a sturdy little bird that is better known to cryptogamic botanists than to other collectors who are not devoted to ornithology. It is only while you are hunting quietly in that particular nature of timber which yields mosses and lichens abundantly that one is likely to become thoroughly acquainted with the White-browed Scrub-Wren. The call and notes of the bird are sharp, clear, and decisive ; and the activity it displays leads it quickly from place to place, principally under

cover, but occasionally to one or other bush track when all is quiet.

The place of habitation for its callow young is lodged among the coarse grass or overhanging twining plants on creek banks. The moist spots are sought, and preference



Fig. 25. White-browed Scrub-Wren. One-fifth natural size.

is given to them at all times. During the September of 1896 I found on the Altona beach a nest made of seaweed placed in a dead branch almost enveloped in the aquatic weeds.

By my wish, a correspondent and clever observer, Mr. George Graham, having the opportunity in the Heytesbury Forest, gave his attention to the nidification, and made the

following observations upon this bird, finding it to be one of the earliest nesters in his district. Before any sign of a nest was shown, a *Sericornis* placed a few grasses together in a thick-leaved bush, and continued to increase the mass for thirty minutes. Then it discontinued and uttered a number of grating notes to make up for lost vocal time, and appealed to its mate—who had been hopping about near branches watching the operation—for a recognition of its work. This was at 11 a.m., when it adjourned work till 6 a.m. the following morning. Then one hour's work was given to the nest. During the whole of the time a series of peculiar grating calls was given, and nothing more was done till the same hour of the third morning (18th September, 1896). The roomy cell of homogeneous plant matter then received the addition of an inner wall of another vegetable material (mainly old withered leaves). The bird now made an alteration in the time table, and during the fourth, fifth, and sixth mornings it laboured from about an hour before noon to an hour after, working leisurely throughout the time till the lining was completed. On the seventh day the first egg was laid ; colour, brownish purple spots and short streaks on a ground of lighter similar shades. The second egg was deposited on the ninth day of the month, and the third egg on the eleventh. On the fourteenth the bird had well set itself to the task of incubation.

In regular visits to four nests the eggs were found to be laid each forenoon early. The young birds hatched out on the twenty-third day from the time of the laying of the third egg, and the young were able to fly on the fifteenth day from the breaking of the shell. The family immediately begins a nomadic life, and the locality of the nest is left to other birds before the morning of the following day.

During the time of incubation the sitting bird leaves the nest to feed at early morning and evening, and at night returns with a small feather or some downy plumage, so that gradually the internal layer of its house is completed to its satisfaction. In six nests observed in that district two were lined with the fur of rabbits, the others with feathers. All were inclined, with the entrance protected from above, and faced the north-east, which is the fine quarter of that period of the year. It was noticeable that the intelligence of the birds led them to build the external portion of their dome nest during rain or in the early morning, when the wiry grasses were pliable and the wet-softened material could be the more easily adjusted to the required shape, while the inner layer was constructed at midday, when the material was drier. My last visit to the timber of Box Hill frequented by the *Sericornis* and other forms enabled me to witness a little scene. It showed me the forms of gallantry on the part of the male *Sericornis* in his courtship are as intense as the most chivalrous of other birds. How those two males courtesied before the lady bird you could not realize without a good-natured smile, bowing deeply, stately, and continually as competition alone, in the majority of cases, forces one or more to do. How the anxious matter terminated I do not know. Doubtless the knight of better points won the day and the other went afield for a second trial of his strength.

Nest.—Oval, side entrance, made of grasses and lined with feathers, &c. It is placed in low, rank vegetation, and always well hidden.

Eggs.—Three or four to a sitting; deep fleshy-white, with a zone of purplish-brown spots about the larger end. Length, 0.75 inch; breadth, 0.6 inch.

WHITE-FACED TITMOUSE,

***Xerophila leucopsis*, Gld.**

Zē-rō-fil'a lū-kop'sis.

Zeros, dry ; *philein*, to love ; *leukos*, white ; *ops*, face.

XEROPHILA LEUCOPSIS, Gould, "Birds of Australia," fol., vol. iii., pl. 67.

GEOGRAPHICAL DISTRIBUTION.—Areas 6, 7, 9, occasionally 2 and 4.

KEY TO THE SPECIES.—Under surface white ; upper surface brown ; forehead white ; tail square ; first primary larger than half second ; bill higher than broad ; nostrils in a semi-operculated groove, round, and partly hidden by feathers.

THERE are three species of "White-faces." One is in Central Australia, a second is rare in the north-west of Victoria with South and Western Australia, while the third is found in the dry parts of Victoria and further inland. It is a cheerful little bird, delighted to build under the verandah of the house and to act as a scavenger about the property. Although omnivorous to a degree, it is insectivorous. It is just such a bird whose presence about a farm is worth cultivating, for it allows no waste, and indirectly helps to prevent germ growth. It is unfortunate that the introduced Sparrow (*Passer domesticus*) does not confine itself to this exact occupation in the country, which it well performs in a town. In most respects the White-face is a tit, but the bill, which is more like that of a grain-eater than that of a tit, separates them. It associates in small flocks of a dozen, more or less, and upon the ground pries into whatever is likely to afford a meal. As the name implies, it is a lover of dry districts. With regard to its nesting, it is not particular where it builds. I once saw a nest in the rolled-up side-flap of a waggonette. The birds, possibly thinking it was of no use

to the owners, built a nest in a part of it. During the period of incubation the sitting bird made two journeys of 24 miles each, and the mate received it very kindly on return. Unfortunately the flap was lowered by a stranger and the eggs were broken.

In the same family and occupying the same class of country is the Wedge-bill (*Sphenostoma cristatum*, Gld.) The call of the Wedge-bill is very dolce, and expressed phonetically it would sound like "Kitty-lin-tof." It is rarely seen in Victoria. The White-faced Titmouse is a bird very much smaller and without a crest.

Nest.—Loosely constructed oblong and open nest, made of grasses and lined with feathers, &c. It may be placed in bushes or such places as under the eaves of verandahs.

Eggs.—Five to the clutch; much freckled with reddish-brown on a faint white ground. Length, 0·8 inch; breadth, 0·6 inch.

GREY JUMPER

(APOSTLE-BIRD),

Struthidea cinerea, Gld.

Strö-thid'ē-ä si-nē'rē-ä.

Strouthos, a small bird; *eidos*, form, appearance; *cinereus*, ashy.

STRUTHIDEA CINEREA, Gould, "Birds of Australia," fol., vol. iv., pl. 17.

GEOGRAPHICAL DISTRIBUTION.—Areas 1, 6, 7.

KEY TO THE SPECIES.—General colour grey; wings pale brown, darker on inner webs of quills and centres of wing coverts; tail glossy black; lining of wing pale ashy-brown; iris white; bill conical. Total length, 12½ inches; wing, 6 inches.

AUSTRALIA has many anomalous birds, and this is one of them. A single species only is known. The Magpie-Lark,

Chough, and Grey Jumper all build large mud nests after the one style, and only varying in size. That of the Chough I found to weigh $9\frac{1}{2}$ lbs. when placed upon the scales, the others being about half this size. Its source of



Fig. 26. White-winged Chough. One-fifth natural size.

habitat is the dry part of New South Wales, and further back, from where it makes its way into the most north-westerly portion of Victoria. The general habits of this species assimilate with those of the Babblers and Chough (*Pomatorhinus* and *Corcorax*) while, of the three, it is at

times most noisy. That is meaning a great deal about a "long tongue." Three or four, or even a dozen, associate in the branches of the trees, and quickly passing from limb to limb with expanded wings and tail, they present rather a comical appearance. It is a noticeable feature in winter to see about a dozen together, from which the common name "Twelve Apostles," or Apostle-bird, has been derived. The Chough, in disposition somewhat like the Jumper, is also the only known representative of the genus in Australia. It is in appearance a slim kind of Crow, with red eyes, long tail, and a white mark upon the wing, distinctly seen when the bird is hopping about the ground. It also is insectivorous.

The White-winged Chough is commonly called the Black Jay, and confused with the Black Magpie (figured elsewhere). A comparison of the plates will show the difference.

Nest.—Made of mud, round, and placed upon a horizontal bough; lined with grasses. Diameter of bowl about 5 inches.

Eggs.—Three or four, sometimes five; the ground is white, with blackish-slate spots, varying in density and in number; some being nearly all white—milky white. Length, 1.2 inches; breadth, 0.8 inch.

BELL-BIRD

(CRESTED OREOICA),

Oreoica cristata, Lewin.

Ō'rē-o'i'kā kris'tā'tū.

Oros, a mountain ; *oikos*, dwelling ; *crista*, a crest (*cristata*, tufted).

OREOICA GUTTURALIS, Gould, "Birds of Australia," fol., vol. ii., pl. 81.

GEOGRAPHICAL DISTRIBUTION.—Areas 1, 2, 3, 6, 7, 8, 9.

KEY TO THE SPECIES.—*Male*—Crest deep brownish-black ; upper surface reddish-brown ; forehead and lores white ; black stripe extends over cheeks and unites with black of lower throat ; chin and upper parts of throat white ; upper part of breast deep brownish-black ; lower breast and abdomen white. Total length, 8·5 inches.

Female—Lighter in colour ; lower throat and upper breast nearly uniform reddish-brown.

THE crested Bell-bird is an inhabitant of the dry parts of north-west Victoria and the interior of the continent. It is not to be confused with the Bell-bird of Gippsland, which is correctly termed the Bell Minah, being classed as a Honey-eater with the Native Minah.

The *Oreoica cristata* is the only species of the genus, and it is confined to this continent. The actions are spirited—a series of hops, and when disturbed a flight into the nearest tree. The bulk of its food is found near or upon the ground, and insects, their larvæ, and seeds form the diet. In many respects it is like the *Collyriocinlæ*, that frequent the drier regions. It stays in the same district during the winter just as in summer, and in October sets about the preparations for rearing a first brood. Mr. Gilbert, the able coadjutor of Gould, describes accurately the vocal powers of the species. "The most singular feature," says

Gilbert, "connected with this bird is that it is a perfect ventriloquist. At first its note commences in so low a tone that it sounds as if at a considerable distance, and then gradually increases in volume till it appears over the head of the wondering hearer, the bird that utters it being all the while on the dead part of a tree perhaps not more than a few yards distant, its motionless attitude rendering its discovery very difficult. It has two kinds of song, the most usual of which is a running succession of notes, or two notes repeated together rather slowly, followed by a repetition, three times, rather quickly, the last note resembling the sound of a bell from its ringing tone. The other song is nearly the same, only that it concludes with a sudden and peculiar fall of two notes." The meaning of the generic name does not well apply to the habitat of the bird, unless considered as a species of our mountains, or rather hills, surrounded by extensive plains. For example, the Macdonnell Ranges in Central Australia, where the bird is quite at home, would apply to the case if the bird was not also quite numerous in wooded, dry areas, and absent or rare in mountains proper.

Nest.—Cup-shaped and deep ; made of bark and lined with fibres, &c. ; placed in the vicinity of the ground.

Eggs.—Two or rarely three to a clutch. They vary considerably, and may have the ground a very pale bluish-white or white ; the dots dispersed upon them may be black, or peculiar blotches and crescents, closely or broadly separated. Length, 1 inch ; breadth, 0·8 inch.

GREAT BROWN KINGFISHER

(LAUGHING JACKASS),

Dacelo gigas, Bodd.

Da-sē'lō gī'gas.

Dacelo, a transposition of *alcedo* (i.e., a kingfisher); *gigas*, giant.

GEOGRAPHICAL DISTRIBUTION.—Areas 3, 4, 6, 7, occasionally 2.

KEY TO THE SPECIES.—Crown rufous brown in centre, white on sides; a band of brown on nape; culmen ascending towards tip of upper mandible. Total length about 18 inches.

AUSTRALIA, a zoological sub-region of the Australian region, has five types of Kingfishers, which, for our present purpose, may be divided into “water” and “land” fishers. The water birds are again divided into (a) short tails, (b) long tails; and the land birds into (a) saw-like bills, (b) giant bills, (c) normal bills. It is under (b) of the second section our friend the Jackass takes its place. The three members of this genus are disposed in two cases strongly on the eastern side of the Continent, and in the third scantily on the northern. It is very rarely a specimen of any is seen in the great South-West—which species is still a doubtful matter.

The Great Brown Kingfisher is the “Bushman’s Clock.” Early to rise and early to bed, and a great deal of strange-like merry laughing announces both occasions. In fact, its voice is an extraordinary one. Most of us like to hear a family, and I do not agree with those early and superstitious immigrants who upon hearing the Jackasses for the first time thought the Australian bush was full of evil spirits. The quickly rising tones of a medley of voices coming down a bedroom chimney in the early morning is an occasional divergence in the ringing-up time. To a

drowsy sleeper the great hall of the chimney would certainly seem a pandemonium. My father's chimney stacks act as survey grounds, and close by a certain old laughter perches in a faithful way upon a church cross. It resorts to all kinds of country—the heavily-timbered, the

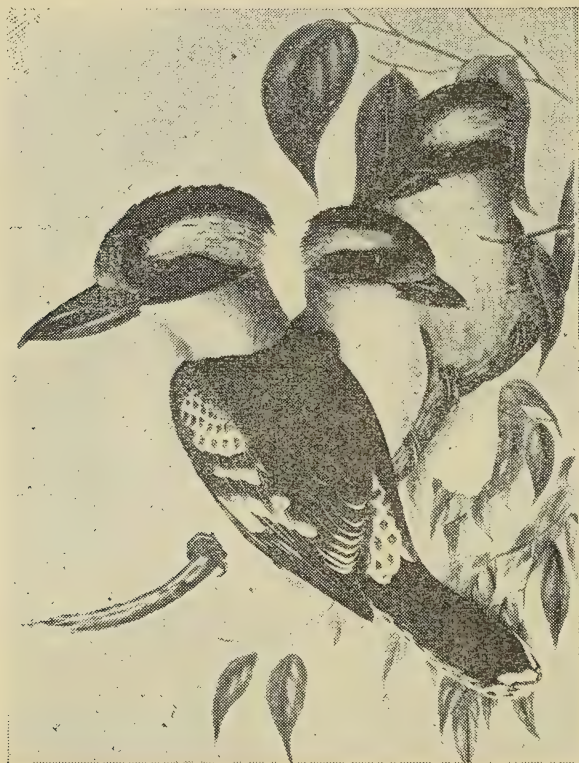


Fig. 27. Great Brown Kingfisher, adult and young. One-sixth natural size.

clumps of trees in dry areas, or in the environment of tilled lands. Its food is certainly a mixed quantity, as insects, lizards, snakes, crabs, and even rats are pulped and swallowed. To give an idea of certain facts in the economy

of the species I quote from observations on a domesticated bird to which I made experimental visits.

A neighbour has a bird which has shown a weakness for a variety of animate things, besides home luxuries. A bandicoot, as large as itself, was the first trial of strength I knew of. The bird occupied three-quarters of an hour in pounding it to a jelly appearance, then the anterior end disappeared. A day was occupied in the digestion and recovery. A rat, later in the week, was similarly pounded and devoured as a whole. On two successive days, within the same month of experiments, sixteen lizards (*Hinulia*, sp.) and seven bloodsuckers (*Amphibolurus*, sp.) were successfully managed, as if the undertaking was quite a pleasure throughout. A Copper-headed Snake, two feet in length and having the head dismembered, was a third banquet, and it was similarly managed. The same bird in November killed its cage mate, a Collared Crow-Shrike, and of course swallowed it. This was a case of the biter bit. The last note was sufficient to satisfy me of its indifference as to what comes first, providing it is substantial.

Nest.—Simply a hollow of a tree with decayed wood upon which to deposit the eggs.

Eggs.—Two or three to a sitting ; pearly white. Length, 1·8 inches ; breadth, 1·4 inches.

SACRED KINGFISHER

(WOOD KINGFISHER),

Halcyon sanctus, Vig. and Hors.

Hal'si-on sangk'tus.

Hals, the sea ; *kuein*, to breed ; *sanctus*, sacred.

HALCYON SANCTUS, Gould, "Birds of Australia," fol., vol. ii., pl. 21.

GEOGRAPHICAL DISTRIBUTION.—Over the whole of the continent, and occasionally in Tasmania.

KEY TO THE SPECIES.—Head greenish blue ; upper surface varying between dull green and blue ; under surface of body and under wing coverts orange-buff, as also the collar ; bill compressed, culmen grooved laterally.

LIKE the Red-backed Kingfisher, the Sacred is not piscatorial in its ways. Far from it ! because of all birds, even those of the desert, it is able to live away from water for months, and live upon lizards, small snakes, beetles, grasshoppers, and sundries. The isolation of the bird is remarkable. In Central Australia and in nearly all the coastal arid parts it may be seen, provided a clump of dry-looking "gums" is there. Within Victoria it proves migratory as the winter advances, though this does not apply to the warmer districts just north of it. It is essentially a hot weather bird.

The cry is penetrative, being clear and sharp. If when you are passing through timbered lands you find the Halcyon vocally active you will know that it has a nest very near in a hollow of a tree. In all probability the mate is sitting upon the eggs, from which you will not easily get it away, as this species is very persistent in its own way. Halcyons are helpful to agriculturists. The task of raising the family commences in October and concludes with a second brood in December.

To say that the Kingfisher is a breeder on the sea is out of place with our present knowledge, but Aristotle, the first historical ornithologist of any note, arranged a fable. For 14 days in midwinter, he says, the birds remain and make nests on the rocks of the Grecian seas, and the sea remains

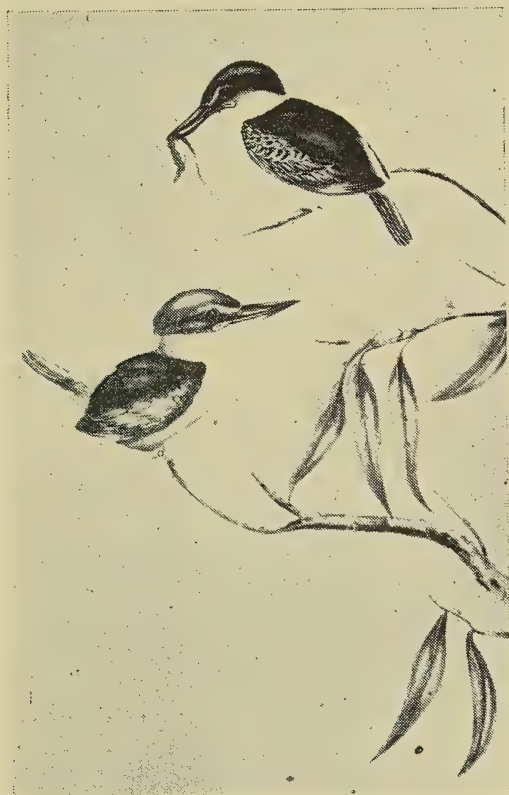


Fig. 28. Sacred Kingfisher. One-fifth natural size.

calm. During this time the nest is built and the young are reared, while on the seventh day after the "longest day" the birds pass away. It is simply a fable, and probably the presence of the Kingfishers means an act of

migration, as they quickly come and go—far too rapidly for this part of the life-history of any known bird.

Nest.—A hollow of a tree with a small entrance, and decayed wood to act as a floor for the eggs.

Eggs.—Four or five to a sitting, pearly white and nearly round. Length, 1 inch ; breadth, 0·9 inch.

GRASS-WARBLER

(CORN-BIRD),

Cisticola exilis, Vig. and Hors.

Sis-tik'ō-lä ek'sīl'is.

Cistus, a rock rose ; *colere*, to dwell ; *exilis*, slender.

CISTICOLA EXILIS, Gould, "Birds of Australia," fol., vol. iii., pl. 42.

GEOGRAPHICAL DISTRIBUTION.—Areas 1, 2, 3, 4, 5, 6, 8.

KEY TO THE SPECIES.—General description sandy buff, much striped ; tail strongly graduated or rounded. Total length, 4 inches.

Winter Plumage.—*Male and female*—Blackish, with streaked head and back.

Summer Plumage.—*Male*—Head rufous. *Female*—Head striped.

THE Grass-Warbler is a tawny-coloured little bird that seems to come when the corn is about two feet high. It is nomadic, because when it has reared a brood of young in a delicate, purse-like nest in the oat crop it goes. Previous to this time it is not seen in settled districts. It is a bird of the rank-grassed country, and particularly shy. Creeping about and not showing itself when danger is near, it is, on this account, not a well-known bird. I had a wonderful

experience some years ago on Phillip Island, where Grass-Warblers are plentiful and not in the least shy. Much depends on the observations being made quietly. They rise from the coarse grass like large brown butterflies, with a slow flight, very much like a flutter. At first sight it is difficult to distinguish between bird and butterfly. Both would rise from the tussocks, and when clear of them would flap along the surface for some time. As soon as the bird got to the horizon the distinguishing difference was evident. The calls of the male in the air are of two natures—one a plaintive and soft note ; the second a brisk whistle, immediately following the first. The time of my visit was the nesting season, November-December, and these little birds used all their wits to keep a friend and myself from finding their nests. Whenever a bird rose from the grass we carefully examined it, with no good result. The bird, mouse-like, had run along the ground for some distance and then flown. To come to the nest it always alighted at a distance from where it was and then hopped through the tussocky ground to it. We tested this by observations in different ways. The only nest we did find was the result of patient search.

Nest.—Small, oblong or pyriform, and side entranced ; made of grass and other fine material, and suspended in coarse grasses, often in growing corn.

Eggs.—Three or four to a sitting ; pale blue, spotted with reddish-brown of varying intensity. Length, 0·6 inch ; breadth, 0·5 inch.

SILVER-EYE

(WHITE-EYE, RING-EYE, BLIGHT-BIRD),

Zosterops cœrulescens, Lath.

Zos-te'rops sē-rō'les'ens.

Zoster, a girdle ; *ops*, an eye ; *cœrulus*, dark green.

ZOSTEROPS DORSALIS, Gould, "Birds of Australia," fol., vol. iv., pl. 81.

GEOGRAPHICAL DISTRIBUTION.—Areas 2, 3, 4, 5, 6, 7.

KEY TO THE SPECIES.—A ring of short white feathers round the eye ; crown olive-green ; back brown ; under surface not uniform ; throat white, sometimes tinged with olive.

ALTOGETHER there are 88 species of Silver-eyes known, 6 of which are found in Australia, and only one of them in Victoria. That one is generally to be seen in favourable numbers in different places in proper seasons ; for it has a nomadic tendency. The first of all Silver-eyes was described from a specimen obtained in Victoria, and the largest species now occupies the small island of Norfolk.

The family-flocks are generally eight in number, and as they travel through the orchards a slight warfare is made upon them, for, in spring and summer they feast upon small fruit, in autumn upon late apples. Certainly its taste for commercial fruits is cultivated when opportunity stares it in the face, but what about the good which I am sure it does ? I remember seeing a Silver-eye hunting along a branch of a tall pear tree. An insect fell from its hiding place, and simultaneously the bird swooped perpendicularly in time to catch the lesser form, and with a right-angled movement escaped the ground, to which it was unpleasantly close.

It is the scourge of the aphids and other noxious insects, when there is no fruit upon the tree, giving special attention in the wild timber to the *Acaciæ*. I will quote a case beyond my own knowledge of its special service. Mr. W. H. F. Hill writes, in the *Victorian Naturalist* :—
“ Amongst the birds the Silver-eye, *Zosterops cœrulescens*,



Fig. 29. Silver-eyes and Nest. One-fifth natural size.

is the chief enemy of the Case Moth, destroying the young larvæ in great numbers. Indeed, but for these useful little birds the Case Moths might easily become a serious insect pest, as they threaten to be in the various city parks and enclosures where the Silver-eye does not dare to go.”

The Case Moth has been figured and described in the handbook issued by the Victorian Department of Agriculture ("Destructive Insects of Victoria," C. French).

In New Zealand the "Transactions N.Z. Institute" renders a very praiseworthy account of the good done by this bird as an aphid destroyer.

Silver-eyes dread the tyrant Butcher-bird (*Cracticus destructor*), and I have found that one or two kept in the gardens with cut wings serve the purpose of good police when the grapes are ripening. Their voices are a terror to the Silver-eyes.

Nesting.—I have observed the callow young as late as 10th February, 1895, at the head of the Ovens River, where spring at a late hour follows winter. The eggs are laid on alternate days, and at an early age the young assume the general plumage of the adult, and then go through the details of the seasonal changes. The nest near grazing areas is formed of fibres, lined with the hair of the horse, cow, or other animal, and externally covered with mosses.

Nest.—Cup-shaped and deep, suspended ; made of grasses and surrounded more or less with green mosses. It is seldom more than 6 feet from the ground. The accompanying figure shows a typical cup-shaped nest.

Eggs.—Three or four to the clutch ; uniform pale blue. Length, 0.6 inch ; breadth, 0.5 inch.

WHITE-FRONTED CHAT

(JENNY-WREN, TANG),

Ephthianura albifrons, Jard. and Selb.

Ef'thi-a-nū'rä alb'i-frons.

Ephthos, languid ; *oura*, tail ; *albus*, white ; *frons*, forehead.

EPHTHIANURA ALBIFRONS, Gould, "Birds of Australia," fol., vol. iii., pl. 64.

GEOGRAPHICAL DISTRIBUTION.—Areas 4, 6, 7, 9.

KEY TO THE SPECIES.—*Male*—Black crescent across white breast ; throat white ; forehead white ; hinder crown black. Bill slender. Total length, 4 inches.

Female—The blacks and whites are much reduced in contrast, and all the parts are greyer.

THE White-fronted Chat associates in flocks in southern Victoria between February and July, upon the high grass and low bushes of open country, uttering its "tang," and becoming as pugnacious as many other birds before the end of July. This is one of four very beautiful and conspicuous species of a genus peculiar to Australia. It is the only one of the three in Victoria that does not migrate north during the late part of summer. It is nomadic only, unless with an exceptionally severe season it may leave the most southerly parts of the colony, and even then it is, figuratively speaking, still nomadic. All build their nests at the bases of herbs or grasses, or some 18 inches from the ground amongst bushes. The birds are early builders, make a cup-shaped nest, deposit three eggs (one on each successive day), and induce the young to leave the nest on the twelfth day from the time of birth. The young are not born on the same day, but with 24 hours' difference in time. If an egg does not develop it lies in the nest for weeks, perhaps till decay sets in—in any case, long after the nest

is unused by the owners. Both sexes take part in incubation and in the rearing of the young, the male taking as keen an interest in the acting of a canopy for the new-born as the mother bird.



Fig. 30. White-fronted Chat, male and female. One-fourth natural size.

Here is another foster-parent for the Narrow-billed Bronze Cuckoo. In a recent December I found an egg of the wanderer unsuccessfully foisted upon a pair of chats, for it had either not been placed in the nest or had been ejected to the wide edge. There it lay uncared for.

During three successive seasons two pairs of this species built their nests at the bases of the same two tussocks of grass. I believe them to have been the same birds throughout the time. There were thousands of other tussocks in the vicinity that could have been utilized for the same purpose without any special effort on the part of the birds—at least, as far as my knowledge of such matters led me to conclude.

The generic name is well applied, as I do not remember ever seeing so much as a flick of its tail. In flight it makes good use of the valuable appendage, but at all other times it seems languid.

Nest.—Open, cup-like, with broad lip and still broader base; made of grasses, and lined with animal hair or fine grass; placed close to the ground in a shrub or on the ground under a thistle.

Eggs.—Three or four to a sitting; white ground, with spots of reddish-brown, inclined to form a zone towards the broad end. Length, 0·65 inch; breadth, 0·5 inch.

TRICOLOURED CHAT,

Epthianura tricolor, Gld.

Ef'thi-a-nū'rä trī'kul-or.

Epthos, languid ; *oura*, tail ; *tres*, three ; *color*, colour.

EPHTHIANURA TRICOLOR, Gould, "Birds of Australia," fol., vol. iii., pl. 65.

GEOGRAPHICAL DISTRIBUTION.—Areas 2, 6, 7, 9.

KEY TO THE SPECIES.—*Male*—Crimson on forehead, crown, breast, and upper tail coverts ; throat white ; bill slender, about equal in height and breadth at nostrils.

Female—Crown, breast, and upper tail coverts faint red.

Young male—Upper tail coverts only red (strong red).

THE four species of chats are, without doubt, very beautiful, and perhaps they will seem more interesting to us because there are only four species known in the universe, and, as before remarked, confined to Australia. The only plentiful species in Victoria is the White-fronted, and its beauty lies in the disposition of the black and white over its graceful form. The remainder are, practically speaking, tropical, of which two annually visit the north-west of the colony to breed. These are essentially hot country forms ; one appearing mostly crimson, the other golden-yellow. All associate in flocks. The two highly-coloured species may be found breeding in the same districts—occasionally the three. The Tricoloured Chat is distinctly a bird that travels south to summer and north to winter. I can endorse the sentiments of other naturalists about being struck with the remarkable beauty of this bird. When first seen by myself, near Swan Hill, a pair was flitting about the salt-bushes in search of insects. Being October, they were arranging material for a nest in one of the bushes.

In one colony, across the river, some birds had fresh eggs, others had young, and a few nests were being built in preparation for the eggs.

Nest.—In all respects the same as an average specimen of *Ephthianura albifrons*, described above.

Eggs.—So much like those of *E. albifrons* that the difference in colouration and size is scarcely perceptible.

ORANGE-WINGED TREE-RUNNER

(BARK-RUNNER),

***Sittella chrysoptera*, Lath.**

Si-tel'ä kris-op'te-rä.

Sitte, a kind of wood-pecker (*sittella*, diminutive); *chrusos*, gold; *pteron*, a wing.

SITTELLA CHRYSOPTERA, Gould, "Birds of Australia," fol., vol iv., pl. 101.

GEOGRAPHICAL DISTRIBUTION.—Areas 2, 3, 4, 6.

KEY TO THE SPECIES.—Middle third of wing quills forming a large rusty-red patch; breast and abdomen streaked with brown; crown of head dark brown. Bill pointed and slightly curved upwards; nostrils with a cutaneous valve.

THE vernacular name implies the habit. While this species keeps mostly to the east and south of the colony, there is a second (*S. pileata*, Black-capped Tree-runner) that resorts to the timber of the north-west. Both search the crevices of limbs by spirally working, head downwards. This habit is in contradistinction to that of the Tree-creepers (*Climacteris*), which inspect carefully the crevices as they move spirally up the tree. Both genera are great eaters of hard-winged insects. The *Sittellæ* go in small flocks of about

eight, fly heavily when pressed for time, and appear more like solid bodies in flight than light bird forms. Of two specimens shot on the 25th of July, 1896, in a clump of timber, the male had a yellow band at the base of upper mandible. This I take to be a sign of immaturity, as the sexes, according to Mr. Gould, are alike in this respect in



Fig. 31. Nest of Orange-winged Tree-runner. One-third natural size.

the adult stage. When the male lost its mate it flew round for some considerable time, calling "twit, twit," and remained restless while looking for insects upon the tree stems to which it resorts.

During a summer day prior to 1895, while accompanying the Messrs. Brittlebank along a portion of the

Werribee River, we took part in a play in which the principal act was performed by members of this species. Our first interest was in a grub that lay quiet in the *Sittella's* mouth, as we were inquisitive enough to know whether the old bird had any objection to our looking on at the anticipated feeding of the young. We were not kept waiting long for the information, but we were for the results. Ten minutes or more that bird continued to fly from bough to bough, and finally decided to creep down the main stem to a crevice in the bark where was carefully hidden a young and fully fledged bird, temporarily secreted. It was fed, and one of us took hold of it. What followed in part may be easily anticipated. There was an uproar by the young bird, followed by three old birds, and all became as tame as Fan-tails. The graceful flying and nearness of their repeated approaches astonished us, even showing an inclination to rest upon our hands, just with that instinctive feeling that tells one exactly when to retire for safety sake. These delicate advances on the part of three adult birds instead of two were followed by three more of the same species joining the group, but keeping at a distance. These latter were young birds. The adult *Sittellæ* rested in the air with a full expansion of the golden-coloured wings, as if for the time from their wild habits tamed, and for moments perched within a few inches of the hand that held the young. The whole scene now was one of blended animation, timber, and birds, with the flying forms passing between and over the four members who constituted our party. The birds soon sought the higher branches, and we faced the ascent of a steep and rugged hill.

Nest.—A clear case of mimicry of surroundings ; small, rounded, and fitted in an upright prong to assimilate in form with the fork ; made of downy portions of grasses, &c.,

and completely surrounded with spiders' webs, lichens, and bark ; inner lining made of mosses.

Eggs.—Generally three to clutch, sometimes four ; ground colour bluish-white, spotted and blotched all over with slaty colouring. Length, 0·6 inch ; breadth, 0·5 inch.

BROWN TREE-CREEPER,

***Climacteris scandens*, Temm.**

Klī-mak'te-ris skan'dens.

Klimakter, a step of a ladder ; *scandere*, to climb.

CLIMACTERIS SCANDENS, Gould, "Birds of Australia," fol., vol. iv., pl. 93.

GEOGRAPHICAL DISTRIBUTION.—Areas 2, 3, 4, 6, 7.

KEY TO THE SPECIES.—General appearance brown, with light streaks along the breast ; central pair of tail feathers brown ; orbital region brown ; fawn-coloured band across wing ; tail square, soft, and shorter than wing ; bill slender, long and curved.

THE Brown Tree-creeper presents a more bulky appearance than its congener, the White-throated. This character alone is sufficient to distinguish the species when you find them associated in the same area, bordering the open country on one side and the heavily timbered on the other. The present species is strongest in numbers in the north-west of Victoria, and the Mallee fringes seem to offer it great attraction, for there it is in numbers. The rough bark of the She-oak (*Casuarina*) and Native Pine (*Callitris*) in such a tract of country as that between Swan Hill and Kerang offers special facilities in which to obtain a food supply. The birds know it and the seasons. It has a very prying nature, poking into logs, investigating spouts,

and occasionally hunting amongst a small pile of fallen timber, all in the search for insects. In the spring it makes a nest in a hollow of a tree, which you find by seeing the bird go into it, subsequent to being attracted by its piercing call. The Tree-creeper is one of those Australian birds that rarely drink, apparently needing very little water. Closely allied is the Red-browed species (*C. erythrops*), a bird found in New South Wales more than in Victoria.

Nest.—In a hollow of a tree, and composed of grasses and feathers interiorly.

Eggs.—Three to the sitting; deep flesh colour, with innumerable spots of reddish-brown. Length, 0·85 inch; breadth, 0·7 inch.

WHITE-THROATED TREE-CREEPER.

***Climacteris leucophæa*, Lath.**

Kli-mak'te-ris lu-ko-phe'a.

Klimakter, a step of a ladder; *leukophaes*, white-gleaming.

CLIMACTERIS PICUMNUS, Gould, "Birds of Australia," fol., vol. iv., pl. 98.

GEOGRAPHICAL DISTRIBUTION.—Areas 2, 3, 4, 6, 7.

KEY TO THE SPECIES.—General appearance brown; throat white; fawn-coloured band across wing; centre pair of tail feathers dark grey; tail square, soft, and shorter than wing; bill slender, long and curved.

It is a significant fact that there are no wood-peckers in Australia. The nearest approach is the tree-creeper, distributed all over the continent by one or other of the

seven or eight species. The White-throated member is thoroughly arboreal in its habits, preferring the heavily-timbered creeks. Accordingly it is mostly found in the southern and eastern portions of the colony, while *C.*

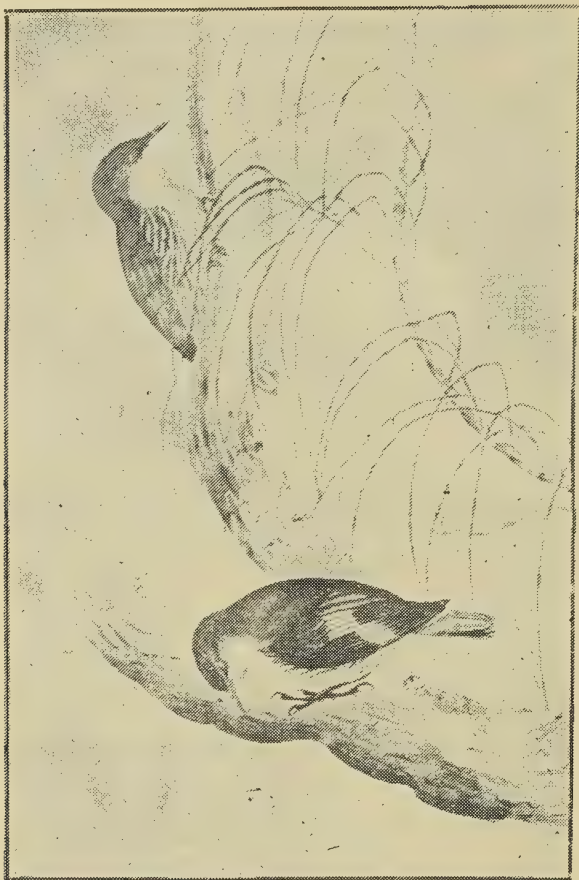


Fig. 32. White-throated Tree-creeper. One-fourth natural size.

scandens has its stronghold in the north-west. In the search for food this genus displays a manner not adopted by any other in our country. Commencing near the bottom of a large trunk, it ascends in a spiral course by a

series of short jumps. Looking at it for a few moments you will gradually see it disappear on the other side of the tree trunk, to reappear in a few seconds on the same side as previously, but higher up. In the search for insects this staircase movement goes on till the bird has ascended well into the branching forks. From there it flutters down to the base of another tree and repeats its previous performance. Insects, to elude the diligent search of the bird, must be very well hidden, but I feel sure many an insect that is not exactly in this "corkscrew" course escapes for the time being. Such insects afford an opportunity for the Tree-runners (*Sittellæ*), as they come and work the trunk downwards, in contradistinction to the Tree-creepers. Such a case I observed one Saturday afternoon at Doncaster ; but it is by no means a rule for one species to oblige the other in this way. The cry of this creeper is shrill and piping, and quite unlike that of the other birds with which it is found associating.

Nest.—At the bottom of the shallow hollow of a tree branch ; grasses without and feathers within.

Eggs.—Three to the sitting ; dull white, with spots of reddish-brown. Length, 0·8 inch ; breadth, 0·65 inch.

COACHWHIP-BIRD

(WHIP-BIRD),

Psophodes crepitans, Vig. and Hors.

Sō-fō'dēs krep'i-tans.

Psophos, an inarticulate noise ; *crepitus*, a bursting noise.

PSOPHODES CREPITANS, Gould, "Birds of Australia," fol., vol. iii.,
pl. 15.

GEOGRAPHICAL DISTRIBUTION.—Areas 2, 3, 4.

KEY TO THE SPECIES.—General appearance olive-black ; breast has white mottling upon it ; lateral feathers of tail tipped white ; lower flanks ashy-brown ; head crested.

THIS genus is strictly Australian. In it there are two species, one inhabiting the eastern and the other the western portions of the continent. It is a close associate of the Lyre-bird, and may safely be regarded as one of the few recluse birds. The call is whip-like, the nearest approach being that of the *Pachycephala*, though the latter is weak in comparison. The clear, strong note finishing like the crack of a whip, the clank of the Lyre-bird, and the toll of the Bell-bird are strange sounds in a wild and solitary glen. The Whip-bird has a low inward series of sweet notes in addition to the ordinary ventriloquial note which seems to come from a bird in the far distance, finishing up a few yards in front of you with a powerful bursting crack, as its classical name implies. I have watched for twenty minutes before finding the owner of such a call ; so close is the tangle in which it lives. The food is insects, which are obtained by scraping amongst the *débris*, the feet of the bird being strong and specially fitted for such an occupation.

Nest.—Open, shallow, loosely constructed, and composed of twigs, leaves internally. It is placed in a miniature jungle, and near the ground.

Eggs.—Two to a clutch; ground colour bluish white, marked over the surface by peculiarly shaped spots and blotches of black. Length, 1 inch; breadth, 0·75 inch.

STRIATED PARDALOTE

(STRIATED DIAMOND-BIRD),

***Pardalotus ornatus*, Temm.**

Pär-da-lō'tus ôr-nāt'us,

Pardalotus, spotted like the panther; *ornatus*, ornamented.

PARDALOTUS STRIATUS, Gould, "Birds of Australia," fol., vol. ii., pl. 38.

GEOGRAPHICAL DISTRIBUTION.—Areas 2, 3, 4, 6, 7.

KEY TO THE SPECIES.—Head streaked white on hinder crown and occiput; all primaries edged with white, forming large wing-patch; speculum red or yellow; strong, short bill, mandibles almost equal; nasal membrane concealed by plumes.

THE genus, which is strictly Australian, and composed of eight species, ranges, in one or other district, throughout the continent. This particular species is practically found all over the land. It is not so much a "diamond-bird" in appearance as *P. punctatus*, but by having a similar structure and habit it is placed under that head. The genus is quite an insectivorous one, and all its members breed in holes. Such places may be in the ground or in trees. It is generally thought *P. ornatus* breeds in both places. This has been considered so in the absence of the knowledge that the sub-species, *P. assimilis*, was and is a Victorian

bird. In a recent paper by the writer it has been proved that both the above birds are here, and further suggested that it is *P. assimilis* which breeds in the ground and *P. ornatus* in the trees. On this point further evidence is needed. This I trust will be supplied by some specially intelligent observer favourably situated.

Nest.—A drilled hole in the bank of a creek, or possibly a tree hollow, at the end of which (say 18 inches) is a compact and rounded open nest of grasses, sometimes almost domed.

Eggs.—Four or five to a sitting ; white, rounded. Length, 0·65 inch ; breadth, 0·55 inch.

ALLIED PARDALOTE

(WIT-E-CHU),

Pardalotus assimilis, Rams.

(Sub-species of *P. ORNATUS*, Temm.)

Pär-da-lō'tus a-sim-i'lis.

Pardalotus, spotted like the panther ; *assimilis*, like.

GEOGRAPHICAL DISTRIBUTION.—Areas 2, 3, 4, 6, 7, 9.

KEY TO THE SPECIES.—Head streaked white ; third or third and fourth primaries edged with white ; speculum scarlet, crimson, orange, or yellow ; bill strong and short, the mandibles about equal ; nasal membrane concealed by plumes.

THE bird does not stay to winter in its breeding haunt, and is away long before sure signs of the coming fall are generally noticeable. Quickly bounding in its flight, it shows the usual methods of the diamond-birds. Rushing from bough to bough, and eucalypt to eucalypt, in search of insects, it leads an active life. The same vigour is shown

on leaving its lowly-placed nest, for it flies rapidly up into a tree to view the position, hunt the trail of an insect, then sooner or later glide or flutter down to its previously



Fig. 33. Allied Pardalote.
One-fifth natural size.

occupied position, perhaps en route to spend a moment on a limb close by. In the search for proven-

der, this useful insectivorous bird follows the course of a bough for "scales," picking up strays and permanents alike. I have watched this bird and the other species all acting similarly in travelling along the stems of saplings, taking off the carapaces and feeding upon the animals within. The remains of Coleoptera and Diptera I have found within the stomachs, although I venture to say this is not the staying point in the wide choice of insect life. On a clear

summer's day one may try to quickly locate the birds in the high parts of tall timber, but, with slim-bodied animals only 4 inches long, it is not easy. Assisted by their calls and

a field-glass you will find them. For a time the little ventriloquists may lead your eyes in all directions, and finally close above you will be seen that for which you search.

Mr. Gould writes of *P. ornatus* having two notes in its call. This phase has three, phonetically "pick-it-up," or "wit-e-chu." Occasionally, I believe, there is a hard-sounding trill, the identity of which I am not sure. Both sexes take part in planning the nest and in the excavation work. While one is labouring at the bowl the other is expelling the material with its feet, little by little, till finally it is forced out beyond the entrance to the ground below. By quietly approaching the tunnel mouth I saw the process in certain of its interesting stages. The male either takes part in incubation, or, which is more unlikely, does all the sitting, because, when I cut away the whole tunnel at a later date (4th November, 1893), I found it alone upon the eggs. Within 2 feet of the entrance was a second cave. It was nearly 3 inches in the hard soil, and sufficient only to shelter the non-sitting bird in the night. The caliology of the sub-species appears to differ from that of *P. ornatus* in so far as feathers are not used as a lining to the nest. Further observations will probably show there is no regular difference.

Description of nest: Cup-shaped, with an irregular and loosely constructed outer lip, for there are two. Drying grasses are used internally and a soft bark in part, specially upon the floor. The whole appears in two portions, the inner being a neat and cup-like body placed down in a loose but regular spherical wall of dried grasses, interwoven and towering concavely above the lip of the inner wall by an inch on one side and 1.5 inches on the opposite one. Height of nest on one side was 3 inches and 4 inches in the

opposing wall. Diameters :—Structure, 4·25 inches x 3·75 inches ; in bowl, 2·25 inches. Depth of bowl was 1·25

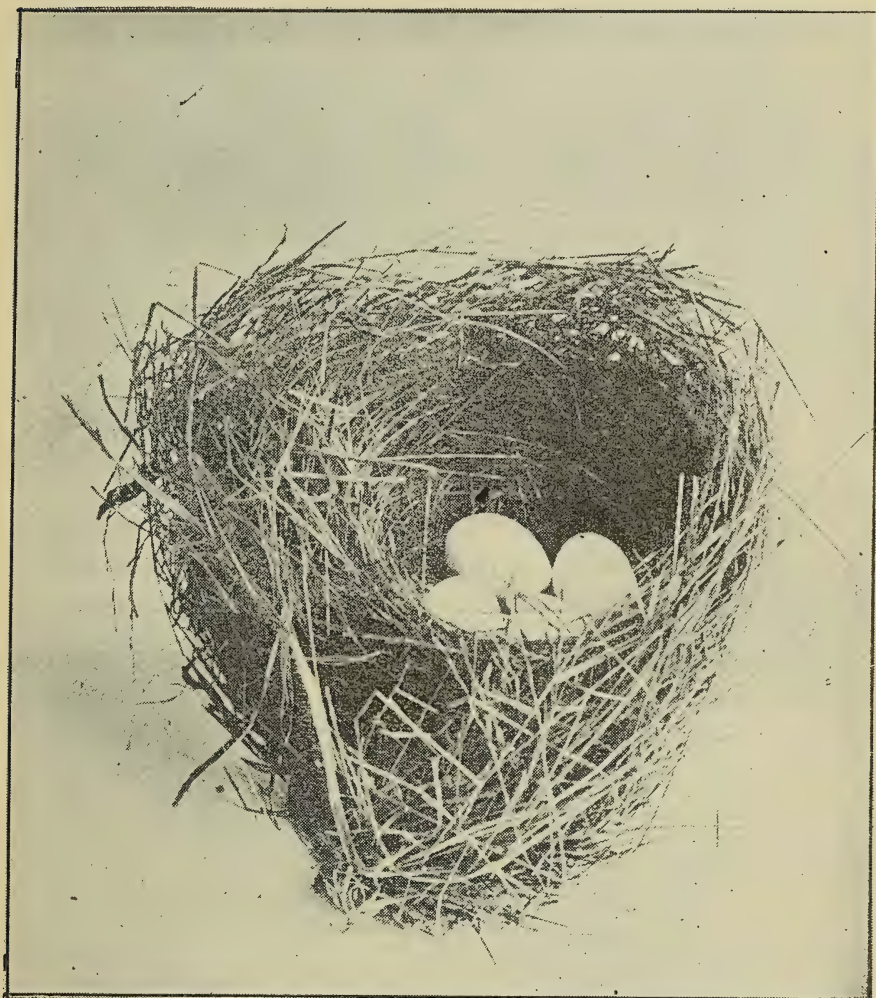


Fig. 34. Nest and Eggs of Allied Pardalote. Two-thirds natural size.

inches. The nest is made to fit in a cavity with domed ceiling in an excavation in the hard subsoil at the end of a

tunnel. This tunnel is 10 inches long, and is drilled with a slight upward tendency, as is usual with most ground-boring birds. The nest entrance is 2 feet below the surface of the ground, and in a creek bank some 9 feet above the bed of a trickling stream, though with the stream not immediately below the entrance. By this arrangement the young birds are fearlessly able to essay their first flight. Judging by the remains of old vegetable matter at the base of the nest, the hollow has been used in a previous year for the purpose of nesting.

The nest appears to me as a wonderful piece of architecture when considered it is built in the dark, and not carried whole into the dark cavity.

The plate of the birds is from a drawing made from specimens by my friend Mr. W. N. Anderson.

Nest.—A rounded structure made of grass and bark, open at or near the top. It is placed at the enlarged end of a drill in the bank of a creek, or in the hollow of a tree.

Eggs.—Three to five, white. Length, 0·65 inch ; breadth, 0·55 inch.

SPOTTED PARDALOTE

(DIAMOND-BIRD),

Pardalotus punctatus, Temm.

Pär-da-lō'tus purgk-ta'tus.

Pardalotus, spotted like the panther ; *punctatus*, dotted.

PARDALOTUS PUNCTATUS, Gould, "Birds of Australia," fol., vol. ii., pl. 35.

GEOGRAPHICAL DISTRIBUTION.—Areas 2, 3, 4, 5, 6, 7, 9.

KEY TO THE SPECIES.—Head black, with round white spots ; back mottled ; loreal spot white ; under tail coverts yellow ; rump chestnut ; mandibles about equal, short and strong ; nasal membranes concealed by plumes.

THE habitat of this thorough "Diamond-bird" in Victoria is principally in the south and south-east, while a very close ally, the Yellow-rumped Pardalote, occupies the Mallee country. *P. punctatus* is a creek-loving bird, performing that service along the banks in moist country that *P. xanthopygius* does in the dry and *P. ornatus* in more open and undulating country. This scheme of local distribution is not to apply in any forced way, as birds trespass very much with a change of season. Both sexes take part in excavating a blind tunnel in the creek bank for their nest, and, like most perching birds, they show a thorough enthusiasm in the work. To find where the species breeds is a matter of close observation. It goes to and comes from a hole in the ground that may be owned by any of a dozen other small animals, so undecided are the signs that a bird lives within. Tunnelling for a few inches on an upward grade, and enlarging the end to place a dome-shaped nest in it, is a creditable work for little ordinary birds. Finally, to build in the dark the grass nest that belongs to them is

a work of skilful manipulation. Most ground-boring birds are content with the tunnel and a few grass stems. When a number of birds were originally collected that had a spotted appearance, and in most other respects were alike, they were all called *Pardalotus* (*i.e.*, spotted), but when a certain *Pardalotus* was found that was genuinely and fully spotted it was specifically called *Pardalotus punctatus* (*i.e.*, spotted spotted). In Australia this is the only really spotted Pardalote, but in Tasmania there is one with forty spots upon it, and actually more spotted.

Nest.—A loosely constructed sphere of grass placed at the end of a short tunnel in the much sloping bank of a creek or hillside near the water. The position varies considerably.

Eggs.—Four in number, and pearly white. Length, 0·75 inch ; breadth, 0·55 inch.

TAWNY FROGMOUTH

(MOREPORK),

Podargus strigoides, Lath.

Pō-där'gus strig-oid-es.

Podar, swift-footed ; *strix*, a screech-owl ; *oides*, like.

PODARGUS HUMERALIS, Gould, "Birds of Australia," fol., vol. ii.,
pl. 3.

GEOGRAPHICAL DISTRIBUTION.—All over Australia and Tasmania.

KEY TO THE SPECIES.—General plumage tawny, streaked and blotched, the male being smaller and much more lightly marked than the female ; gape very wide ; mouth very much split ; nostrils a narrow split near the base of the bill, protected by a membrane and hidden by plumes of feathers ; tarsus shorter than middle toe ; rectrices pointed. Tail distinctly less than 10 inches ; wing more than 9 inches.

PRACTICALLY speaking this bird is weak-footed rather than swift-footed as its generic name implies. What was probably meant is swift-winged and noiseless. Being nocturnal, it has a delicate plumage, assuring for it, as it does for the Owl, noiseless flight. In popular opinion it holds what is due to the Boobook Owl, in the power of saying "more-pork" or "boo-book," according to your translation of it ; but it has been proved beyond a doubt that the Owl, and not the Frogmouth, says "more-pork." A friend of mine caught one, and, releasing it in the evening, it flew to a tree, and immediately offered up thanks by saying "more-pork" twice. Its call is a feeble and unattractive one, except to its own kin. "Oom, oom, oom," repeated about a dozen times, is a simple description. Of the four Australian species we have one in our colony, but that one is now a thoroughly federated one, being found throughout Australia and Tasmania. Until recently it was not known to

be in the occident ; now it has completed the geographical chain, encircling the continent.

Amongst the various notes I hold on this species I would like to quote those in a letter to me from my correspondent,

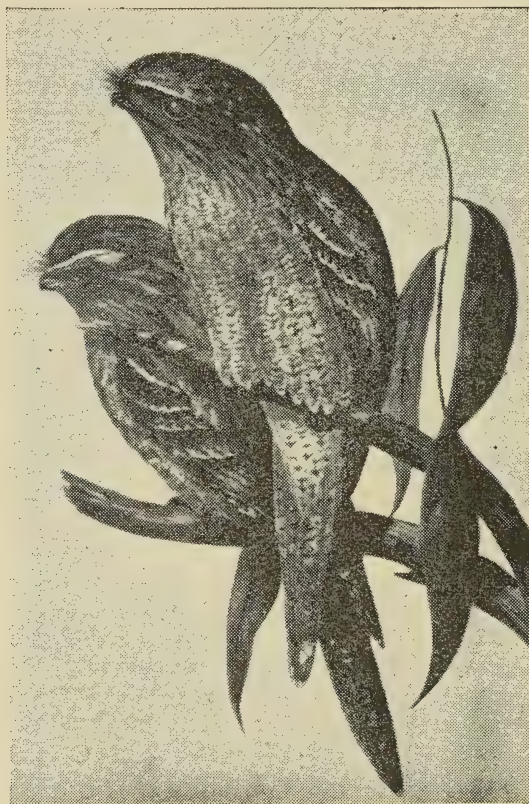


Fig. 35. Tawny Frogmouth, female and male (twilight position).
One-sixth natural size.

Mr. J. A. Hill, a naturalist-farmer in the Wimmera. Mr. Hill says:—"On account of the nocturnal habits little is known about it. Certainly it is a most inoffensive bird, and as far as my observation goes it lives chiefly on insects and

mice. In the daytime it roosts generally on a thick bough, with another piece of dry limb over it. The dry limb being of the same colour as the bird, it would be easily passed without being noticed. This at least helps to show that the bird not only knows its own colour, but also the protection afforded by the dry piece of wood above, as hawks, magpies, &c., would not dive at it while against the limb. They generally roost in pairs, and in the same place for weeks together. It does not fly until forced by the throwing of a stick or in some other way. The breeding season is about the last week in August or beginning of September. The nest is generally composed of a few green leaves placed in a large fork, often not more than 10 feet from the ground, the fork generally being flat but sometimes a little slanting. The nest is so shallow that on more than one occasion I have seen the eggs roll out when the bird was disturbed. The eggs are white in colour and generally two in number, but on one occasion I found three in a nest. It seems to guard its young, for when forced to leave its nest it will sit on a limb near by, snapping its beak very savagely at you. I have frequently heard the note of this species during the day in the breeding season, but it is generally heard just after sundown." To its *menu* I can add, from personal observation, centipedes, tarantulas, crustaceans, and many hard-winged insects. In fact, they are excellent destroyers of garden vermin, often slugs in particular. The plumage of the bird is a clear case of protective colouration, and the mimicry of the bough on which it rests is by the bird well displayed, resting lengthwise, as it generally does. On the 19th October, 1894, I found a nest containing two grey-downed young, with male parent sitting at an angle of 45 degrees and motionless. After a few minutes' interval, as if to cast a shadow of

doubt on the primates below, its eyelids were opened, and then, but not till then, did it reveal a distinctive marking easy of observation in the broad yellow iris. The female was perched parallel with an almost horizontal bough above us, and so motionless that it was mistaken for an iguana. Both were studies, and almost unrecognizable. However, a weighty stick carefully deposited destroyed the equilibrium of one and caused a movement of the wings of the other. On the 25th of November, 1894, a nest was found placed at the junction of three nearly perpendicular limbs. This is an unusual place. The nest was disturbed, so the birds deserted, to the best of my belief for that cause. This consideration has been strengthened by my observations recently in Western Australia.

On the Flinders-street station, Melbourne, in November, 1895, I was somewhat amused at being offered a young bird for the sum of one shilling. It was close season. The vendor either had a bold spirit, found it "folly to be wise," or was ignorant of the legal circumstances that might have attended the case.

Nest.—A flimsy structure of twigs that simply serves the purpose of holding the eggs, with care by the bird while flying off and on to it. It is placed on a horizontal fork at varying altitudes in small trees.

Eggs.—Two or three for a sitting; clear white. Length, 2 inches; breadth, 1.4 inches.

ROLLER

(DOLLAR-BIRD),

Eurystomus australis, Swains.

Ū-ris'tō-mus às-tra-lis.

Eurus, wide ; *stoma*, mouth ; *australis*, southern.

EURYSTOMUS AUSTRALIS, Gould, "Birds of Australia," fol., vol. ii.,
pl. 17.

GEOGRAPHICAL DISTRIBUTION.—Areas 2, 3, 4, 6, 8.

KEY TO THE SPECIES.—General appearance green ; bill, legs, and feet red ; head and neck dark brown ; bill as broad at gape as it is long, culmen rounded. Total length, 10·5 inches ; bill, 1 inch ; wing, 7·75 inches.

AT all times in this colony it is an uncommon species, while in southern Victoria there are, probably, no more than five records of its presence so far south. The Roller is represented in Australia by one species only, and it is one of the few birds that are spread over this continent with which I have had no personal contact of special value. Mr. John Gould, upon observations made in New South Wales, writes :—

"It arrives early in spring, and, after having reared a family, retires northward on the approach of winter. It appeared to be most active about sunrise and sunset. In sultry weather it was generally perched upon some dead branch in a state of quietude. It is a very bold bird at all times, but particularly so during the breeding season, when it attacks with the utmost fury any intruder that may venture to approach the hole in the tree in which it has its eggs.

"When intent upon the capture of insects it usually perches upon the dead upright branch of a tree growing beside and overhanging water, where it sits very erect till

a passer attracts its notice, when it suddenly darts off, secures its victim, and returns to the same branch. At other times it may constantly be seen on the wing, mostly in pairs, flying just above the tops of the trees, diving and rising again with many rapid turns. During flight the silvery white spot in the centre of the wing shows very distinctly, and hence the name of Dollar-bird bestowed upon it by the colonists.

“It is a very noisy bird, particularly in dull weather, when it often emits its peculiar chattering note during flight.”

Nest.—In the hollow of a tree, with decayed wood as a floor.

Eggs.—Two or three in number; white, rather glossy, and sometimes variable in form, some being oval and pointed, others being round (A. J. North). Length, 1·45 inches; breadth, 1·05 inches.

BEE-EATER,

***Merops ornatus*, Lath.**

Mē'rops ôr-nāt'us.

Merops, a bee-eater; *ornatus*, adorned.

MEROPS ORNATUS, Gould, “Birds of Australia,” fol., vol. ii., pl. 16.

GEOGRAPHICAL DISTRIBUTION.—Areas 1, 2, 3, 4, 6, 7, 8, 9.

KEY TO THE SPECIES.—Green mantle; a broad black patch on the fore-neck; tail black, the centre feathers, which are elongated, washed or edged with blue; bill long, culmen sharply ridged; feet syndactyl.

BEE-EATERS are surely dangerous-like birds to the apiarists. To a small extent this is so; and we nearly always find an element of evil in the so-called good! Briefly I may

state a case in their favour, because, while the bee-keeper is likely to suffer a little, the cultivators of the soil benefit much. Go to their nests when the callow young are in them, and in the majority of cases you will find an exceedingly large number of insects (not bees) awaiting home consumption. Previous to this they are either on trees perched in anticipation of a beetle or fly passing that way, or are in pursuit of it. It makes short incursions from a branch, returning to the same place or one near by. It is one of those birds that come into northern Victoria about October of each year, and go out nearly the same way as they came in January or February.

The birds associate in small flocks, and their elegance and beauty make them general favourites whenever they are seen beyond the close environment of bee-farms. It is all over Australia, and is a world-wide form, our one being the Australian species, and the only species known on this continent. In its nidification it is very much like the Kingfishers, tunnelling holes for nests and laying white eggs. Mr. Arnold says:—"The Spaniards, who eat all sorts of little game, with no regard for plumage or habits, capture bee-eaters at night by going round and pouring water into holes in banks and trees where they roost, at the same time holding a net over the entrances, into which the affrighted birds speedily dart." People who eat "robins on toast" are not good examples for Australians to follow. It is rarely seen so far south as the latitude of Melbourne.

Nest.—Tunnelled in the flat or rising ground, or in the bank of a watercourse; no vegetable nest at the end of it.

Eggs.—Five to the clutch; pearly white. Length, 0·8 inch; breadth, 0·7 inch.

SPOTTED NIGHTJAR,

Eurostopus argus, Hartert.

Ū-roś'tō-pus ār'gus.

Euros, the east wind ; *topos*, place ; *argus*, bright.

EUROSTOPUS ARGUS, a preserved and mounted specimen in the National Museum.

GEOGRAPHICAL DISTRIBUTION.—Areas 1, 2, 3, 4, 6, 7, 8, 9.

KEY TO THE SPECIES.—Freckled grey and brown ; large white patch at side of neck ; abdomen and under tail coverts uniform rusty brown ; mouth is deeply cleft and gape is very wide ; wing less than 9 inches, tail $6\frac{1}{2}$ inches.

THE Nightjars are nocturnal birds. The four Australian species are all found in Victoria, and it is remarkable that the plumages are said to vary with the nature of the soils the birds frequent. Between two of them there is so strong a likeness that in the identification it is only safe to keep to measurements. This is how Mr. Hartert, an English nomenclator, leads me to put it. The other species is *E. albigularis*, and it has the wing more than 9.5 inches in length. A third species is *Caprimulgus macrurus*, Hors., with the four outer primaries spotted white and the wing $7\frac{1}{2}$ inches in length. The fourth species is the Owlet Nightjar, specially referred to on the following page.

In appearance, for the sake of common description, they might be called miniature "Moreporks." While hawking for insects in the twilight the movements of this species are particularly rapid. During the day it is found upon the ground, or close to it, reposing in slumber. Judging by the scarcity of the bird in winter time, it, in all probability, goes further north to winter, to get the advantage of a warmer latitude. Like nearly all the night-flying birds,

the Spotted Nightjar is beneficial to man, coming upon the scene just as the feeding time of other birds is drawing to a close. Grasshoppers, beetles, and soft-bodied insects are generally found in the stomachs of dissected birds.

Eurostopus is probably intended to convey to us the idea that the genus is an eastern one.

Nest.—Simply the ground, and in close relation to a stone, &c., to serve as a partial breakwind.

Egg.—One only for a sitting; of a uniform light olive-stone colour, with here and there a roundish purple blotch or spot (A. J. Campbell). Length, 1 inch $5\frac{1}{2}$ lines; breadth, 1 inch $1\frac{1}{2}$ lines.

OWLET NIGHTJAR

(LITTLE MOREPORK),

***Ægotheles novæ-hollandiæ*, Lath.**

Ēgö-thel-ēs nō-vē-hol'an-di-ē.

Aigos, a goat; *thæin*, to suckle; *novæ-hollandiæ*, of New Holland.

ÆGOTHELES NOVÆ-HOLLANDIÆ, Gould, "Birds of Australia," fol., vol. ii., pl. 1.

GEOGRAPHICAL DISTRIBUTION.—The whole of Australia and Tasmania.

KEY TO THE SPECIES.—Mouth very much split; gape very wide; two stripes on brown head and two crescents on hinder part white; back, rump, upper wing coverts and upper tail coverts deeply vermiculated with pale grey; tail barred; wing quills grey marbled and spotted; lower parts whitish, with dusky vermiculations. Total length, 8.5 inches. Some specimens show a rufous tinge over the body.

THE "Owlet" belongs to the weak-footed order of birds, and although nocturnal it is quite opposed to the Owls, which are a portion of the strong-footed order. While

these latter depend very much on their talons for the critical capture of their prey, the little insectivorous bird trusts to its open mouth, which, when expanded, is a formidable trap to an insect wending its homeward way. Such a mouth is rapidly moved forward by almost noise-

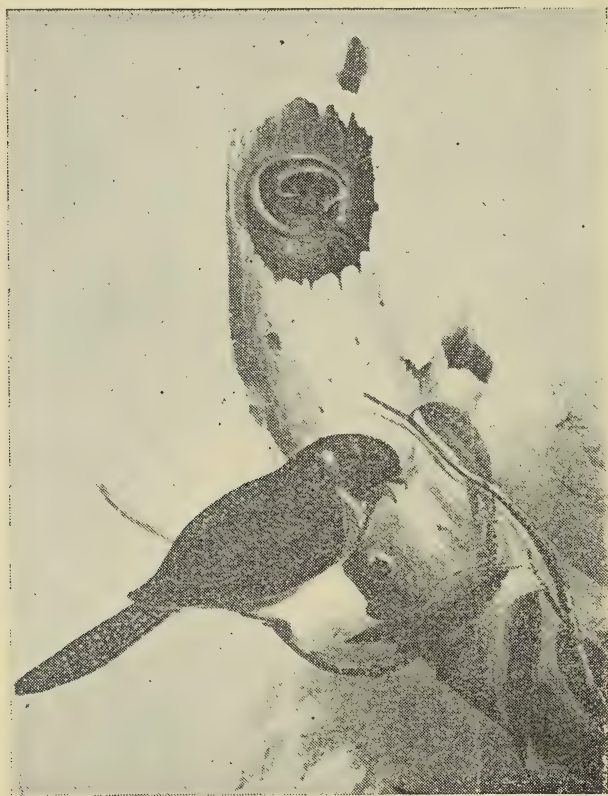


Fig. 36. Owlet Nightjar and Nest. One-fifth natural size.

less wings. Mr. Gould writes of this species:—"During the day it resorts to the hollow branches, or spouts as they are called, and the boles of the gum-trees, sallying forth as night approaches in quest of insects, particularly small Coleoptera. Its flight is straight, and not characterized by the

sudden turns and descents of the *Caprimulgi* " (*i.e.*, the previous species). " On driving it from its haunts I have sometimes observed it fly direct to a similar hole in another tree, but more frequently parallel to it. When assailed in its retreat it emits a loud hissing noise, and has the same stooping motion of the head observable in the Owls ; it also resembles that tribe of birds in its erect carriage, the manner in which it sets out the feathers round the ears and neck, and in the power it possesses of turning the head in every direction, even over the back, a habit it is constantly practising. A pair I had for some time in captivity frequently leapt towards the top of the cage, and had a singular mode of running or shuffling backwards to one corner of it."

When traversing the woods the usual mode of ascertaining its presence is by tapping with a stone or a tomahawk at the base of the hollow tree, when the little inmate will almost invariably ascend to the outlet, and peep over to ascertain the cause of the disturbance. If the tree be lofty, or its hole appears inaccessible to those beneath, it will very likely retire to its hiding-place, and there remain till the annoyance be repeated. It then flies off to a place of greater security.

There are three other species of nightjars in Victoria, mentioned above, and all bear a likeness to the birds universally known as goat-suckers.

Nest.—Simply the dust in a hollow of a tree, a few inches down.

Eggs.—Three or four to a sitting ; white. Length, 1 inch ; breadth, 0.85 inch.

PALLID CUCKOO,

Cuculus pallidus, Lath.

Kū'kūlus pal'id-us.

Cuculus, a cuckoo ; *pallidus*, pale.

CUCULUS INORNATUS, Gould, "Birds of Australia," fol., vol. iv.,
pl. 85.

GEOGRAPHICAL DISTRIBUTION.—The whole of Australia and Tasmania.

KEY TO THE SPECIES.—General appearance grey ; eyelash yellow ; tail barred with white and fan-shaped ; wing reaching beyond tail coverts ; feet zygodactyl.

EXCLUDING the winter season the Cuculidæ are always to be found here, and even then solitary birds remain, instead of getting north, as is their migratory habit. Listen for them in the early part of September and you will generally hear the voices of two species apart from the calls of all other birds in this colony. Of the twelve Australian species of cuckoos, six annually visit Victoria. Altogether some 180 species are known, and represented by—(a) True Cuckoos (Cuculinæ), (b) Lark-heeled Cuckoos (Centropodinaæ), (c) Bush Cuckoos (Phœnicophœinaæ). (a) is universal ; (b) is tropical—for example, the Spur-footed Cuckoo of Queensland ; (c) is unrepresented in the Australian region.

The largest of our mainland cuckoos (*Centropus phasianus*, Lath.) measures 24 inches in length, and is the only non-parasitic species, while the smallest (Bronze Cuckoo) is $5\frac{1}{2}$ inches, and, like all the others, is parasitic.

When cuckoos, or cuckows as Professor Newton has it, arrive here to spend the warm season, they do not come with the voice that tells the European people their blithe spring comers have arrived. Even the boys are puzzled in

them and their eggs, and in addition seldom answer well why the anomalous eggs are found in certain nests. They have the "wandering voices" but not the notes from which the simile is drawn. When the spring blossoms begin to appear in the fields the minstrelsy of the cuckoos is heard along the borders of towns as well as forests. After this the piercing voice is more rural, and till late in January, on rare occasions, the call for what I consider a marriage partner is still given, and repeated until Dame Fortune beams upon him. Especially in October are the weird notes of the Bronze species heard above those of smaller denizens of the same woods. As for the Pallid Cuckoo, it sits upon the tallest dead bough of the highest tree and wails its melancholy note until those of each bar in the ascent become thoroughly *accelerando*.

Everyone living beyond a city should hear the bird in its first burst of "song" in September, but it is apparently dead to the world of men by February. The little birds begin to lead a lively life on arrival of these nomads, for, being parasitic, objections are raised. In the case of the Pallid species, nests of birds building open structures are chosen, while the other four species are distributors of their honours to those of side entrances as well as wide-open cups. The Fan-tailed species and two Bronze species choose 75 per cent. of dome-shaped nests, while the Square-tailed species is content with 50 per cent. and the remaining half of open nests. Because tits are so thoroughly insectivorous and obliging, they act in the majority of cases as foster-parents. The mature cuckoo is supposed to be the only bird that eats hairy caterpillars, and probably the only insectivorous one that is supposed to lay twenty eggs in a season; so that there should be plenty of cuckoos to combat the larvæ. If I mistake not, we will

find that one of the birds already introduced to our colony eats hairy caterpillars.

The dates of the arrival of *C. pallidus* were, according to my notes—the 1st of September in 1896, the 12th of August in 1897, and the 20th of August in 1898. These cuckoos start to call at daybreak (5 o'clock), and the Bronze disturbs the peace in the hours just previous to midnight. I have more than once left a cosy fire at 10 p.m. to investigate the strange sound.

The call of the Ash-coloured Cuckoo (*Cacomantis flabelliformis*, Lath.), is a high-pitched, hard-sounding trill, and given as if the bird was in trouble and seeking someone. It gives me the impression that the meaning of its generic name, “prophet of ill,” was applied as if it had a direct bearing on the voice. It is certain the birds of the neighbourhood do not like it, and as my friend Mr. Graham has made a fuller observation, I quote from one of his letters as follows:—“On the 30th August, 1897 (eighteen days after the arrival of the cuckoo), a pair of Scarlet-breasted Robins attacked an Ash-coloured Cuckoo, alighting together upon its head and back. They worried it for half a minute, the cuckoo not caring much, judging by appearances. When it flew away to catch a grub several Yellow-rumped Tits took offence at its presence and offered fight. Flying to a green tree, it was then beset by a White-shafted Fan-tail. From there it flew to the ground, amongst the ferns (*Pteris*), outside the slab fence. I could not see it, but by the loud commotion among the Scrub-Wrens (*Sericornis*) it evidently was not welcome. Having risen again, it was attacked by the Sordid Wood-Swallow in force, and driven off. During the series of attacks it offered no defence, seemingly occupied alone in the search for its daily food.”

The following dates give the arrivals of three species

of cuckoos on two near latitudes for the respective seasons :—Bronze Cuckoo (*Chalcococcyx plagosus*, Lath.)—Box Hill, Victoria : 25th July, 1895 ; 24th July, 1896 ; 26th July, 1897 ; Heytesbury : 27th September, 1896 ; 21st September, 1897. Ash-coloured Cuckoo (*Cacomantis flabelliformis*, Lath.)—Box Hill : 14th August, 1895 ; 5th August, 1896 ; 1st August, 1897 ; Heytesbury : 28th August, 1896 ; 12th September, 1897. Pallid Cuckoo (*Cuculus pallidus*, Lath.)—Box Hill : 1st September, 1896 ; 12th August, 1897 ; Heytesbury : 29th September, 1896 ; 26th September, 1897.

The scanty figures given show the Pallid species arrives between two and four weeks later than the Fan-tailed and Bronze species, and that the arrival of the same species at the Heytesbury district, according to my correspondent, is one or two months later. I presume that Box Hill is upon the migratory course from the north-east, and that the Otway-Heytesbury district is the terminus, except for those that go further west or cross the strait for Tasmania. The dates of arrivals appear to be fairly uniform in each year.

Nest.—This species being parasitic, it has no nest of its own, but places the egg in one or other open nest of an insectivorous bird, such as the Robin or Fan-tail.

Egg.—One in a nest ; pale salmon colour, generally uniform, but sometimes with odd spots of chestnut upon it. Length, 1 inch ; breadth, 0·75 inch.

BRONZE CUCKOO,

Chalcococcyx plagosus, Lath.

Kal-co-kōk'siks plā-go'sus.

Chalkos, copper (*i.e.*, of that colour); *kokkux*, a cuckoo; *plaga*, a stripe; *ous*, denoting "presence," fulness.

CHRYSOCOCYX LUCIDUS, Gould, "Birds of Australia," fol., vol. iv., pl. 89.

GEOGRAPHICAL DISTRIBUTION.—The whole of Australia and Tasmania.

KEY TO THE SPECIES.—General appearance bronzy; the under surface clearly barred; crown and back of neck dark violet-brown; basal half of tail never uniform rufous; no rufous edges to quills and with little rufous on under surface of wings and outer pair of tail feathers. Total length, 6.25 inches; wing, 4 inches; tail, 3 inches.

IN the same district, and even in the same paddocks, we have two species of Bronze Cuckoos that are very much alike when on the wing. The one differing from the above is known as the Rufous-tailed or Narrow-billed Bronze Cuckoo, because it has a narrower bill and the basal two-thirds of the tail are rufous. One lays a bronze egg, the other a pink-spotted one.

Of the Bronze Cuckoo (*C. plagosus*, Lath.), the earliest find of its egg by myself was on 24th July, 1896—a mild winter—but the calls of the birds were not heard by me till after this date. The foster-parent in this case was the Yellow-tailed Tit; and the last egg of the season observed was on the 9th of January, 1897, also in the nest of the Yellow-tailed Tit. The latest find of a young bird by the writer was on the 12th of March, 1897; others had not yet migrated. Sentiment, as with most birds, is in this one. Early in September, when they arrive in the course

of migration from the north of Australia, I saw three upon the same bough. One flew to the ground, and the remaining two became very frivolous. One of the bough birds now sought an insect in the air, and catching it returned



Fig. 37. Bronze Cuckoo, young, male, and female. One-fifth natural size.

and offered it to number three, who very sensibly accepted it. The ground bird must have been offended, for it did not return to the bough, and the group dispersed.

“Diamond cut diamond” is manifest often enough with the Narrow-billed Bronze Cuckoo (*Chalcococcyx basalis*,

Hors.) and the Blue Wren ; but now I find the Striped Ground-Tit (*Chthonicola sagittata*) objects also. On the 25th of December, 1894, I observed a cuckoo's egg in this tit's nest under the inner lining. The Ground-Tit had covered it to stay incubation. In December I took from the male chamber of a Yellow-tailed Tit's nest a fresh egg of the cuckoo, while below in the incubating chamber were three young. The upper room was also domed, with side entrance, and I fear the cuckoo was as much deceived with this parlour as the proverbial fly was with another. A third peculiar case showed a cuckoo's egg upon the ledge of the nest of the White-fronted Chat (*Ephthianura albifrons*), 18th December, 1895, while within were two quite naked young and one egg. Did the Chat push this egg on to the ledge? The following observation was recently made at Swan Hill by three of my friends. I identified for them two eggs of this species in the same nest of *Xerophila leucopsis*, already mentioned, along with five eggs of the latter (27th October, 1897).

Dr. Rey, in *Nature*, remarks that such an example is a sign of the colonizing instinct, and upon his theory, these eggs being differently marked and with various colour density, they belong to different females. The theory is said to have been exploded. Different members of this species have been known to lay their eggs in the nests of 22 different species of birds, and at the present moment there is the interesting point to be settled whether the insect-eating Diamond-bird (*Pardalotus assimilis*) is not also a foster parent. It is not usual to place an egg 12 inches down a hollow ; for how would the young cuckoo turn out the proper young of the nest? This interesting item will need time and observation to settle. The cuckoo's egg has been found in a similar situation, viz., in the nest of the tree-

creeper. Recently, in England, photographs have been made of a young cuckoo in the act of expelling the other young by placing its shoulders under each and lifting them overboard one at a time. The foster parents are all insectivorous birds with one exception (Red-browed Finch) and even that feeds its young on soft insects during the season, which practically means the same. Robins, wrens, chats, tree-runners, and tits (chiefly the latter) pilot the egg and young through their early stages.

In three birds obtained in the same number of months of 1897 I noticed the following differences :—(a) March : a large proportion of brown in the plumage. Presumably this is a very young bird. (b) August : the wing coverts tipped with brown have disappeared, and the barred markings of the breast are dentate, nearly as in (a). (c) September : the dentate markings are now transverse parallels, and are not so heavy as in (a) and (b). It seems to me the stage (b) is a one-year-old, while (c) is matured or two years old. The presence of bars or stripes on the under surface seems to denote the meaning of *plagosus*.

Nest.—Parasitic birds use other birds' nests. This species places one egg in the nest of a tit principally.

Egg.—One to a nest ; occasionally two will lay one each for the same nest ; uniform bronze colour. Length, 0·65 inch ; breadth, 0·5 inch.

PIPIT

(GROUND-LARK),

Anthus australis, Vig. and Hors.

An'thus às-tra'lis.

Anthus, a small bird ; *australis*, southern.

ANTHUS AUSTRALIS, Gould, "Birds of Australia," fol., vol. iii., pl. 73.

GEOGRAPHICAL DISTRIBUTION.—Areas 2, 3, 4, 5, 6, 7, 8, 9.

KEY TO THE SPECIES.—General plumage tawny, exceedingly dark in some cases and very light in others ; outer tail feathers white, without any brown on the outer webs ; second, third, fourth, and fifth primaries distinctly emarginate ; minor secondary quills nearly as long as the primaries ; bill slender, the profile of the culmen swollen from centre to tip.

OUR meadow Pipit scarcely needs a mention, as it has spoken for itself, I may safely say, to each of you. The larks appear to differ from the pipits in the bills of the latter being more slender and notched, as well as the hind part of tarsus not being divided into plate-like surfaces as with the larks, so that our familiar Ground-Lark should always be honoured with its more appropriate title of Pipit. The nest is invariably placed upon the ground, and the birds prefer the same place to the air. For five minutes together you may keep the slim-footed runner moving in and out along its course, seldom essaying flight for more than a few seconds, till, finding you are intent upon annoying it, away it flaps with the wind for 100 yards or more. If it wishes to enter an adjacent field, and pass houses *en route*, it will rise quickly into the air, fly high, and fall rapidly upon the new pasture, favoured with the wind. If a quarrel arises between the smallest number that can make a quarrel, a long, rapid,

and zig-zag flight follows, little in accord with the usual short, unventuresome flight.

The golden rule of the Pipit is to escape from danger by rapid and even running along the ground, not divulging its presence by any motion of flight. When trouble has subsided, and without any loss of time, an attack is made



Fig. 38. Pipit and Nest. One-fourth natural size.

upon the nearest insect that is weighty enough to be of valuable consideration.

The congregations of this bird in the season when most species agree to associate is seldom more than ten to twelve in a flock upon the ground. Beyond this period the pairs,

by themselves or with their young, are seen by daylight almost in any green or brown field, or heard at nightfall, when other birds are making straight for home by all the rural short cuts known to them. A direct flight of, say, 25 yards will occupy about five seconds, while a run in a straight line of 15 yards will take approximately the same time. Wherever a dry channel offers itself the bird will use it for escape by running, and in this way I noticed, some time ago, a young White-fronted Chat trying to evade observation and make its escape. By way of comparison, both feign well an injury or youthful weakness to distract your attention from the nest of eggs or young that the parent birds have been forced to leave owing to your presence. I fear their decoy hopes are not as advantageous to them as "silence is golden" would be, for the nest would seldom be found were it not for their own aid in rising from it, and plainly saying by their action "There it is. All you have now to do is to look for it within the limited bounds prescribed for you ; but, remember, the law protects me !"

The young are early models of the old. Before leaving the saucer-shaped nest of grass material the outer two rectrices are white, each with a central longitudinal dark line, and this before these feathers are an inch in length. The little birds early learn to catch the worms which appear after a heavy rainfall in such plenty, and juvenile Pipits soon find themselves doing well in business.

Associated with it in the field is a Bush- or Thick-billed Lark (*Mirafra*), and so much are they alike that most of us do not know there are twin-like birds in the field. The *Mirafra* has a stout bill, and is shorter in the body. The food of the Pipit is ground-living animals, as worms and beetles (*Scarabidæ*).

Nest.—Terrestrial, cup-shaped, and placed in a hollow provided for it by an introduced animal, or in a slight depression beneath a tuft of grass, and made of dry grasses, not always exposed as in the illustration.

Eggs.—Three to the clutch; brownish-white, with blotches and spots varying in the intensity of brown. Length, 0·9 inch; breadth, 0·6 inch.

VICTORIA LYRE-BIRD

(NATIVE PHEASANT),

***Menura victoriae*, Gld.**

Mē-nū'rä vik-to'ri-e.

Mene, the crescent moon; *oura*, a tail; *Victoria*, Her Majesty the Queen.

MENURA SUPERBA, Gould, "Birds of Australia," fol., vol. iii., pl. 14.

MENURA VICTORIÆ, mounted specimens, National Museum, Melbourne.

GEOGRAPHICAL DISTRIBUTION.—Area 4.

- KEY TO THE SPECIES.—Tail feathers of extraordinary length, and lyre-like, many devoid of hooklets; outer tail feather white below, bars being chestnut; under tail coverts ashy; back ashy-brown. Female has a less singular tail.

OF the many wonderfully-formed animals in our country this is perhaps the most beautiful. Its tail alone would form an emblem worthy of the country. The genus, of which there are three species, confines itself to dense and humid country east of the longitude of Melbourne. One species alone is found in Victoria, a second in New South Wales, and a third, with the second extending its range, in Queensland. While Victoria has two conspicuous classes of country it has two species of so-called "Native

Pheasants," one the "Mallee Pheasant," and the other the "Gippsland Pheasant." Neither belongs to the true pheasants, being known as such in the vernacular only. The difficulty of observation of Lyre-birds is particularly great. You need to travel comfortably to the confines



Fig. 39. Nest and Young of Victoria Lyre-bird. One-twelfth natural size.

of the heavy, boggy, and thoroughly wet timber, and then, to study the natural economy, your labour begins. The forcing through matted vegetation and slimy logs has to be done noiselessly, as the bird is seldom, if ever, pleased with

any trespass on its haunts. So shy is its disposition that when you have accidentally broken a twig, after treading carefully upon at least 50,000 during the half-hour's approach, away goes the male bird like a flash of lightning. You move on again in the full possession of what is left of your self-control after two or three attempts to see the "Mocking-bird of Australia" on its playground. However, a view of the playground eventually shows you it is a small cleared space of about three feet square in the tangle of twining vegetation. It is made of raised ground, kept fairly well weeded by the constant use the male makes of it while dancing to please its mate, in the winter time especially. It is at this period of the year many of the animals in its neighbourhood are mocked in turn. In the 1884 volume of the *Victorian Naturalist* Mr. A. J. Campbell writes very nicely of this bird, when he characterizes its vocal powers in the following way:—"The powerful, sonorous ring of the Lyre-bird's natural song is not surpassed by any of its Australian compeers; as to its mocking capabilities, it certainly leaves all the world's mocking-birds far behind.* Its ear is so accurate that it can imitate to the very semitone the vocality of any of its forest friends, whether the solemn 'mo-poke' of the Owl, the coarse laugh-like notes of the Great Brown Kingfisher, or the higher pitched and more subdued notes of smaller birds. But the most extraordinary performance is the imitating, not a single bird, but a flock; therefore it has to produce duplex or double-sounding notes. I have heard it imitate simultaneous sounds exactly like the voices of a flock of Pennant Parrakeets rising from the scrub. It is equally at home with other familiar sounds: the grunting of the Koala

* Dr. Shufeldt champions the cause of the Mocking-bird (*Mimus polyglottus*) of North America.

or Native Bear, the barking of the selector's dog, the noise of the splitter's saw, or the clinking of his axe against the metal wedge, all alike are perfectly reproduced in the throat of this most singular feathered mimic." Now, the question, raised possibly for the first time, is whether this is a mocking-bird in the true sense—vocally, not anatomically? I give the substance of a letter to me by Mr. T. W. De Lany, of Omeo:—"The Lyre-bird is generally thought to be a mocking-bird, but after quite twenty years amongst them I am of the opposite opinion, as I never heard them imitate anything whatever beyond the ordinary round that they all have, and every one exactly alike. The notes of the birds that they use, in my opinion, have been acquired many ages ago, when their ancestors were imitators, and have now become set and hereditary. A friend of mine years ago had a young cock bird, and although it was taken from the nest, and never had an opportunity of hearing other birds, it whistled the same as those in the scrub. At the time I did not quite believe it, but since I do. Only yesterday I was out looking for Wonga Pigeons, when I shot a yearling Lyre-bird, with a tail the same as a hen, and it was whistling just as any old bird does on his dancing heap." On this matter I should be glad to have expressions of opinion. My own is, the male inherits a series of notes and quickly learns more with the opportunity. The Buln-Buln, as it is sometimes called, is protected from damage by Act of Parliament, and rightly so, because of its insectivorous habits and natural unique structure. The food varies between insects and very lowly organisms; snails and crustaceans help to support it. Although not a frequenter of the gardens of pioneer settlers in our wilds of heavy rainfall, it is closely associated with the surroundings. Maize, potato and other crops that flourish in moist lands

all benefit indirectly by the services of this bird. The nesting is peculiar to the bird. A heavy dome-shaped mass of strong twigs is placed on the ground, on a stump, or 15 feet up in the fork of a tree in the quiet of a glen. The inner part of the nest is made of fibres. The entrance overlooks a small expanse of air, so that the sitting hen may easily soar away from it. If the single egg in the nest is touched by a human being it is at once deserted, the case being a parallel one with that of the Black Duck. Mr. De Lany, quoted above, tells me the period of incubation of one egg noticed by him was 8 weeks and 1 day. This is a surprisingly long time. The reference made here to Gould's coloured figure of *M. superba* will serve to direct you to the nearest resemblance to *M. victoriæ*. There is no good plate of the latter species available for inspection.

Nest.—The description is due to the observations of Mr. Campbell. “The inner or proper nest is constructed of the dark-brown wiry and fibrous material of tree-fern trunks and other fern rootlets closely matted together and interwoven with stringy leaves, moss, sand, &c., the inside bottom being lined with the bird's own breast feathers. It is oval, about twice the size and same shape as a modern football, with an end lopped off which serves for a rounded side entrance. This inner nest is embedded in an anterior or outer nest composed of large sticks and twigs, resembling that of an eagle, with spouted platform or landing-place at the entrance. The roof of the inner nest is also protected with sticks, and over the whole structure are often artfully thrown a few dead or green fronds and other vegetation. The dimensions of different nests do not vary much. The following are sizes of one which I took on the spot. It was situated in a gully, on a slight eminence consisting of a fallen tree-fern trunk with other *débris*. So cunningly was

it hidden that it was undiscoverable from behind to a person not two paces off; but the front, which betrayed it, commanded a good outlook down hill. Over all, height, breadth, and depth were 2 feet each way; through diameters (*i.e.*, length and breadth) of interior nest, 1 foot 3 inches across; inside or egg cavity, from wall to wall and from roof to floor, 10 inches each way; and from entrance to back wall 1 foot 1 inch. The ragged, spouted platform or landing-place extended 5 or 6 inches beyond the entrance. The egg, which was hidden by the feathers, lay at right angles with the entrance, and measured 2 inches 5 lines by 1 inch 8 lines." I am indebted to Mr. H. B. Williamson for the negative which has produced the accompanying plate of the nest. At the entrance of it is the young bird, specially placed there for this purpose.

Nest.—Described above. Bulky, side entrance, sticks and rootlets.

Eggs.—One to a sitting. The ground colour may vary between purple and brown; the smudges and spots are much like the ground colour, but appear as if above and below the surface; texture of shell rough. Length, 2·5 inches; breadth, 1·5 inches.

BUSTARD

(PLAIN-TURKEY),

Eupodotis australis, Grey.

Ū-pō-dō'tis ās-tra'lis.

Australis, southern; *eupodia*, strength or speed of foot; *otis*, bustard.

OTIS AUSTRALASIANUS, Gould, "Birds of Australia," fol., vol. vi., pl. 4.

GEOGRAPHICAL DISTRIBUTION.—Areas 1, 2, 3, 4, 6, 7, 8, 9.

KEY TO THE SPECIES.—Feathers of the neck and forehead elongated; a black patch across the chest and the sides of it; greater wing coverts ashy-black, with a white spot at the end; bill flattened and obtuse. Total length, 48 inches.

THIS, the only species in Australia, is isolated in the geographical distribution of Bustards, there being none in the Malay Archipelago nor the adjacent Asiatic mainland. Its nearest relative seems to be an Otis in India. "Turkeys" were numerous at a recent date in Victoria, but now they dwindle with advancing civilization. To resist the temptation to shoot the first Bustard that comes along seems beyond our average sporting man. A law is made to protect a bird that protects the interests of the growers in general, yet that law is not properly respected. It is our misfortune, for such a strong eater of ground vermin, as grasshoppers, &c., as it has been proved to be time after time should be allowed to maintain its independence and wander across those paddocks it chooses without fear of any molestation. During a recent visit to Western Australia I met with exactly the same results as occurred here twenty years ago, for, quite in a definite manner, I was told that 84 Bustards had been killed in one district during

December, 1899. Neither sportsmen nor officials seem to understand to what this reckless shooting will lead—namely, a great deal of labour protection over crops, that should fall to the lot of the bird. Such another land-stalker was the Emu. In this respect our colony is not likely to see the light of other days. Perhaps it is not a special matter for regret, as the Emu is rather fond of grass, and the compensation is a doubtful one.

Young Bustards leave their nests at a very early age, their guardian angel affording them much protection under the law of mimicry.

As with Gulls, Rails, and Quails, they quit their nests and shells almost as soon as they are hatched in them, keeping to the ground till such time as their wings will carry them short distances. In this respect they differ from young Mallee Fowl (Mound-builders), which can fly soon after leaving the nest. On a New Zealand steamer recently two Mound-builders' eggs, while being brought to Dr. Snowball (the children's friend), hatched out on the cabin table, and without a moment's hesitation one flew across the room, so strong were its wings.

Nest.—Simply a very slight depression in the ground.

Egg.—One to a sitting; olive colour, with long brown smudges upon it. Length, 3 inches; breadth, 2·2 inches.

STONE PLOVER

(LAND CURLEW),

Burhinus grallarius, Lath.

Bu-rhin'us gra-la'ri-us.

Bu, from *bous*, an ox ; *rhis* (*rhinos*), the nostril ; *grallæ*, stilts.

GEOGRAPHICAL DISTRIBUTION.—Areas 2, 3, 4, 6, 7, 8, 9 ; accidental in 5 (W. V. Legge).

KEY TO THE SPECIES.—Upper surface ashy-grey, much streaked ; lores, narrow eyebrow, and a spot below eye white ; black and rufous line across the eye and ear coverts ; cheeks reddish-brown ; hind toe absent ; bill shorter than head, apical portion swollen and forming marked dertrum, the apical curve of genys ascending gently. Total length, 20 inches.

THIS long-legged bird is generally to be found upon the ground, running just as plovers do, and living under conditions very little altered. While the bulk of plovers prefer the plain, this species will frequent either the timber country or the grassy open. It is the proprietor of the weird call “wee-loo” or “cur-loo” that the bushmen hear in the night. It is only a nocturnal bird to the same extent as the ducks, geese, and waders in general are night birds. The habits are not the same as those of the Owl or Morepork, although it feeds at night as well as by day. The Stone Plover is a stately bird while walking across the plain, and if disturbed the pace will change into a rapid run. Often it will bring its great power of mimicry to bear in self-protection by choosing a place that harmonizes with its colour. Assuming a rigid form in almost any peculiar position it will remain very quiet till the danger has disappeared. Hawks are its natural enemies, and it is ever on the alert for them. Sportsmen know how difficult

it is to approach within gunshot range, and the strategy required to outwit it. Generally a pair only associate ; at other times six to eight birds, or even as many as fifty are said to have been seen in a flock in the winter. The food of the bird is insects, ground fruits, and sundry forms.

Nest.—Simply the bare ground in lightly timbered country.

Eggs.—Two to a clutch. They are subject to much variation in the ground colour between a light stone and a dark one, both having brown spots and irregular blotches upon them to a greater or less degree. Length, 2·2 inches ; breadth, 1·6 inches.

WHITE-FRONTED HERON

(BLUE CRANE),

Notophoyx novæ-hollandiæ, Lath.

Nō-tō-foix nō-vē-hol'an-dī-e.

Noton, the back ; *phoxos*, tapering to a point ; *novæ-hollandiæ*, of New Holland.

ARDEA NOVÆ-HOLLANDIÆ, Gould, "Birds of Australia," fol., vol. vi., pl. 53.

GEOGRAPHICAL DISTRIBUTION.—Areas 1 to 9 inclusive.

KEY TO THE SPECIES.—General appearance slaty-grey ; forehead, eyebrow, and throat white ; dorsal plumes grey ; sides of chest vinaceous ; breast plumes lanceolate ; a full crest ; tarsus not twice the length of outer toe and claw ; middle claw pectinated.

HERONS, Bitterns, and Ibis are a useful working medium in all swampy country, but the best of all without any doubt are the former, and standing at their head for usefulness is the White-fronted Heron. When this species

is seen round Melbourne in large numbers, as in 1897, the omen is for a dry interior. The greatest flock seen by myself at any time numbered 57 birds (16th December, 1896, Western Port), but there probably have been larger ones, and the more the merrier, for they are capital vermin-destroyers. I have observed their capacious stomachs crammed with grasshoppers, and Dr. Cobb speaks of them as fluke-eaters while the animal is in its host, *Bulinus* (a freshwater mollusc). This species plays its part ably when the balance of nature seems disturbed.

The shooting of the Heron for sport is a serious mistake by those who carry a gun for, very often, misdirected recreation. Surely a little observation would convince anyone with common-sense that the Heron carefully patrols every watercourse for crayfish ("Yabber") and snails, or the fields for grasshoppers, moths of destructive grubs, &c. I have repeatedly watched solitary pairs, and to absolutely prove the above results I have shot them for that purpose. In every case I found them to have well-filled stomachs of one or other species of animal that is vermin to the agriculturist. Take the case of land crabs. But some of you will say that is of no material value, and what if a few crabs are not eaten. I say it is of infinite value to those who have irrigation drains, for of the two special workers needed to keep order one is the Heron. It saves the sieving of the drain, and that means money. Drains are yet to become a valuable "commodity" in this country. The grazier unconsciously feels the result as much as anyone. As an instance, in recent years many species of freshwater snails have been discovered in Victoria to house the "fluke" that eventually gets to the liver of the sheep. The flukes finally leave the snail and go on to the grass, when grass and fluke are eaten by the first flock of

sheep that comes along. The White-fronted Heron has a say in this matter, because it is fond of snails, thus saving the sheep, and perhaps the grazier. It is a pleasing sign to see Herons when the grasshopper horde has appeared, for the birds work wonders. Too much cannot be said in favour of the White-fronted Heron.

Nest.—A flat structure of sticks and leaves, placed upon a small horizontal fork, or in a broad upright fork of a fairly large tree.

Eggs.—Four to a sitting; uniform bluish-green colour. Length, 2 inches; breadth, 1·4 inches.

PART II.

BIRDS INSECTIVOROUS AND VERMIN-DESTROYING.

WHILE submitting a plea for the protection of birds that give their quota of help in the subjection of animals termed "noxious," I do so with some diffidence regarding certain of them. Crows and Hawks have the popular opinion against them, but I feel it is not too much to say that many of them are absolutely necessary in the order of things, and in particular to the agriculturist. Upon careful inquiry about the Crows and Ravens that inhabit each of our colonies, I find they are highly insectivorous, and make excellent scavengers. It is just a little unfortunate that they are not as virtuous as they are wise, that vice, cruelty, being rather strongly developed.

The genera *Dacelo*, *Halcyon*, and *Podargus*, acting partly under this head, have been specially referred to in the first part. Herons, Egrets, Spoonbills, Ibises, Plovers, Bitterns, Dottrels, and Rails, other than being destroyers of crustaceans, grasshoppers, moist-land insects, and other vermin, are harmless in the interests of the agriculturist. These several birds may safely be considered in this section.



Fig. 40. Nest and Eggs of Pectoral Rail. One-seventh natural size.

KESTREL

(SPARROW-HAWK),

Cerchneis cenchroides, Vig. and Hors.

Serk-ně'is seng-kroi'-des.

Kerchne, the kestrel ; *kenchros*, small grain ; *eidos*, form.

TINNUNCULUS CENCHROIDES, Gould, "Birds of Australia," fol., vol. i., pl. 13.

GEOGRAPHICAL DISTRIBUTION.—Areas 1 to 9, excepting, possibly, 1 and 2.

KEY TO THE SPECIES.—General appearance rufous ; head streaked with black ; tail barred with black and tipped with white. Total length, 11·5 inches ; culmen, 0·75 inch ; wing, 9 25 inches ; tarsus, 1·5 inches.

THE Kestrel is not the true Sparrow-hawk (*Accipiter cirrhocephalus*), and the point is worth emphasizing, because the former is insectivorous, while the latter is strictly a bird of prey. To science, 15 species of kestrels are known, of which one is disseminated throughout Australia, excepting, possibly, the most northerly parts of the continent. Why it should be found in Derby on the west and Rockingham Bay in the east, and no further north, I can only surmise. Some falcons go into our lowest latitudes. These two genera are anatomically closely connected, and Professor Alfred Newton suggests the possibility that both are descendants from the Sparrow-hawk of New Zealand, a bird of much higher courage than any kestrel. Both sexes take part in incubation, the male sitting in a hollow of another tree during the night but relieving its mate in the task of incubation during the day. The eggs in my collection were taken from the deserted nest of the White-winged Chough. The young, which are three or four in number, when ready to fly are without the yellow cere.

The flight of the bird is buoyant and easy, and when performing circles high up in the air on a summer's day the characteristic flight is seen. I have noticed the remark that insects fly high during midday, and the Kestrel

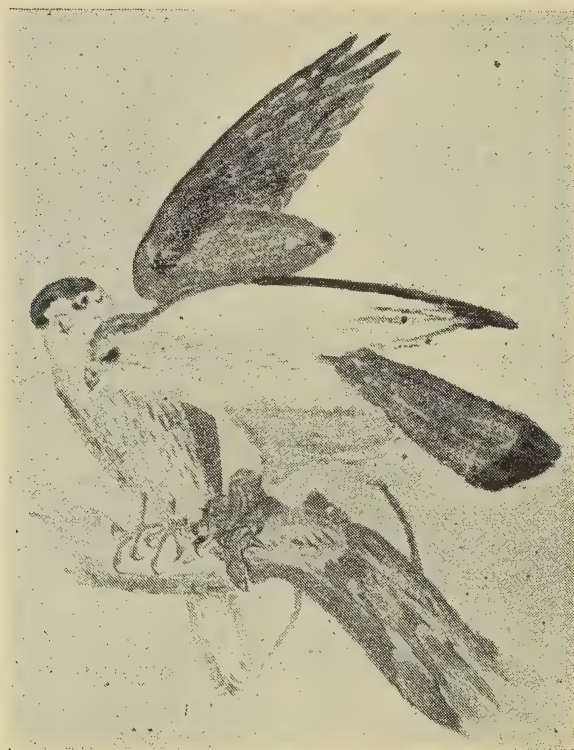


Fig. 41. Kestrel. One-sixth natural size.

follows in pursuit. It is nomadic, and is guided in its wanderings according to the movements of the various insects and other food upon which it subsists. The specific name applies to a certain disposition of the markings.*

* *Cenchrus* is a species beyond Australia. It is not improbable *Cenchrus* was so named because of its likeness to the form of that species.

Nest.—The *débris* in a hollow spout or on a cliff.

Eggs.—Four to a clutch ; colour reddish-brown, the blotches and spots being heavier than the ground colour and varying in intensity. Length, 1·5 inches ; breadth, 1·2 inches.

BROWN HAWK,

Hieracidea orientalis, Schlegel.

Hi-e-ra-sid'e-ä ô-ri-en-ta'lis.

Hierax, a hawk ; *idea*, resemblance ; *orient*, east ; *alis*, pertaining to.

IERACIDEA BERIGORA, Gould, "Birds of Australia," fol., vol. i., pl. 11.

GEOGRAPHICAL DISTRIBUTION.—All through Australia and Tasmania.

KEY TO THE SPECIES.—General appearance brown ; under surface of body creamy-buff to blackish-brown ; cere blue-grey ; tarsus transversely plated near base of toes.

THE Eastern Brown Hawk is found in all the colonies, and a second and closely allied one is found in the western portions of Victoria and New South Wales. From these areas it goes across the continent. In the Mallee the association of the two species is confusing.

The Striped Brown Hawk is striped on the under surface. With age it becomes creamy-white ; then, and not till then, it shows a distinct difference in the two. The young, when placed together without labels, are so much alike, and vary so greatly, that the difficulty of distinguishing the one-year-old bird is a trouble not easily surmounted. Although Brown Hawks occasionally worry small birds, domesticated and at large, the greater portion of their diet is composed of insects, snakes, lizards, and carrion. When the grasshopper season arrives, an examination then, as at other

times, will show their stomachs to be well laden with destructive insects or their caterpillars. The female hawks, like owls, are much larger than the males, though in this case it is not well marked. The birds are to be found in pairs, excepting when a horde of caterpillars are travelling across the land. On such an occasion, Mr. Gould says, several hundreds will flock to stay the ravage, even though their view of the matter be quite a different one to ours.

Nest.—Open, cup-shaped, and large, made of sticks and lined with fibres or light twigs. The position of the nest may be high on a swaying branch, or near the ground in a stunted tree.

Eggs.—Two or three for a sitting; the ground colour may be very pale chestnut with blotches of strong reddish-brown upon it, or the blotches may be light and one end of the egg have a whitish ground. Length, 2 inches; breadth, 1·5 inches.

BLACK-SHOULDERED KITE,

***Elanus axillaris*, Lath.**

El'a-nus axs-il-a'ris.

Elanus, a genus of birds; *axilla*, arm-pit.

ELANUS AXILLARIS, Gould, "Birds of Australia," fol. vol. i., pl. 23.

GEOGRAPHICAL DISTRIBUTION.—Areas 1, 2, 3, 4, 6, 7, 9.

KEY TO THE SPECIES.—General appearance greyish-white; shoulder black; axillaries white; bare part of tarsus in front less than middle toe.

THERE are several kinds of kites. This one is found practically all over Australia. Some little care is necessary to distinguish it because of a close ally (*E. scriptus*, Gld.)

which differs only in having the axillaries black and a black bar beneath the wing, as shown in the accompanying plate. For this latter reason it is called the Letter-winged Kite. It is a semi-insectivorous bird, partly owing to the feebleness of its bill and legs. Birds of prey must be strong in these regions. The distribution of this species is in the



Fig. 42. Letter-winged Kite. One-sixth natural size.

warmer parts of the colony, and only occasionally it passes south of the Great Dividing Range. The disposition of the Kite is to perch on the dead limbs of high trees, or among the higher branches, rather than spend much of its time upon or near the ground.

Nest.—Open, and composed of twigs, and internally lined with fibres and small twigs.

Eggs.—Three or four in number; ground colour, where visible, white, mostly smeared with blotches of a reddish rusty-chocolate. Length, 1·6 inches; breadth, 1·25 inches (A. J. North).

BOOBOOK OWL,

Ninox boobook, Lath.

Ni'noks boo-book.

Ni, not (neither, *i.e.*, twilight); *nox*, night; *boobook*, in imitation of its call.

ATHENE BOOBOOK, Gould, "Birds of Australia," fol., vol. i., pl. 32.

GEOGRAPHICAL DISTRIBUTION.—Areas 2, 3, 4, 6, 7, 9.

KEY TO THE SPECIES.—General colour rufous; interscapulum not spotted; wing 10·25 inches long; tarsus not twice the length of middle toe; facial disc unequal, the part above much larger than that below; outer toe reversible.

OF all the owls this is to us the best known, and possibly the most useful of them. In nature it plays a wonderful part; silent and unobtrusive, yet performing its avocation surely and perseveringly. When we consider that there are some 765 species of birds in Australia, and only, say, two dozen able to do the night work of checking the ravages of insects or other animals, we should see that a careful preservation of all be strictly enforced. The late Mr. Gould remarked—"In no other country is there a greater proportion of insectivorous birds than in ours, and certainly none in which nocturnal species, such as the Podargi (Frogmouths), are more numerous." It is clear to me the continent needs them, and it is for you to help to keep, as well as possible, this balance. Owls about your

haystacks are a safeguard against night-flying insects and the depositing of their ova. The Powerful Owl (*N. strenua*) is possibly the only species that regularly kills small birds. The others have a varied diet—small insects and small quadrupeds. *Ninox boobook* eats insects of various orders, principally locusts and other neuroptera, as noted by Mr.



Fig. 43. Boobook Owl. One-fifth natural size.

Gould. Occasionally a small bird is captured. The Owls of this continent are divided into two families. Two noticeable features keep them quite separate. The first, that the "wishing-bone," or furcula, is not attached to the breast bone (sternum), and the middle toe is not serrated

as in the Bubonidæ ; and the second that the furcula is attached to the sternum, and the middle toe (claw) is found to be serrated. The two families include 13 species and 2 sub-species. Our largest owl measures 2 feet in length, the smallest 13 inches. Certain of them keep to heavily timbered country, others to the sparsely wooded lands. All breed in hollows and lay white eggs.

The call of this species is "boo-book" or "more-pork." It is the owl that calls "more-pork" and not the bird we know as "Morepork" or Frogmouth.

Nest.—Hollow of a tree with decayed wood for the eggs to rest upon.

Eggs.—Three to a sitting ; white and finely pitted. Length, 1·5 inches ; breadth, 1·3 inches.

CROW,

Corvus coronoides, Vig. and Hors.

Kôr'vus kor-o-noi'des.

Corvus, a crow ; *korone*, a raven ; *eidos*, form.

CORVUS AUSTRALIS, Gould, "Birds of Australia," fol., vol. iv.,
pl. 18.

GEOGRAPHICAL DISTRIBUTION.—Areas 1 to 8 inclusive.

KEY TO THE SPECIES.—Plumage uniform blue-black ; neck and body feathers snow-white at the bases ; first primary is long, equal to or exceeding the innermost secondaries ; hallux very strong.

OUR continent has a Crow and a Raven. The first is very much in evidence, with results so good that many people who have carefully watched their habits say they are of infinite value to us. The side for the prosecution is scathing in its

remarks. Dr. N. A. Cobb (*Agricultural Gazette of New South Wales*, 1896, pp. 565-578), by comparison, considers the food of the Australian crow to be on a par with that of the American one. To test the value of the common crow in the States, the Government at Washington arranged to have 1,000 crow stomachs examined. The investigation of the whole matter was thoroughly made, occupying nearly ten years, and engaging the attention of specialists for portions of that time. "I gather," says Dr. Hart Merriam, "that crows have a predilection for insects possessing a strong odour. For this reason they destroy a large amount of insect life that many other birds pass over. The percentage of fruit eaten during the year is trivial, and the amount of birds' eggs and young poultry shows 1 per cent. of the food supply for the year. Insects form 26 per cent. of the entire food, and the bulk of these are grasshoppers, cutworms, and other injurious kinds. When insects are abundant they form the bulk of the food." In summing up the evidence gathered during ten years, Dr. Hart Merriam says:—"It is clear that the good exceeds the bad, and that the crow is a friend, rather than an enemy, of the farmer." Mice frequently occur in the stomachs.

Dr. Cobb makes some suggestions as to keeping it in order. "The shooting or poisoning of the bolder crows that pull sprouting grain or steal fruit is so obviously commendable that the law should not interfere with the farmers' efforts in this direction. On the other hand, so useful a bird should not be outlawed. The best way to deal with our sable friend is to frighten him away from the place he is likely to damage, but otherwise to let him alone." Certain means are recommended, such as scarecrows, windmills, pendant tins, poles and strings, poison, tarred grain, &c.

“Just consider for one moment the helplessness of man before an advance of a plague of grasshoppers. Day by day the young hoppers issue from their breeding grounds, and in countless numbers make their way over the country, on foot or by flight, eating every green thing. To-day the country is flourishing; to-morrow the plague passes by,

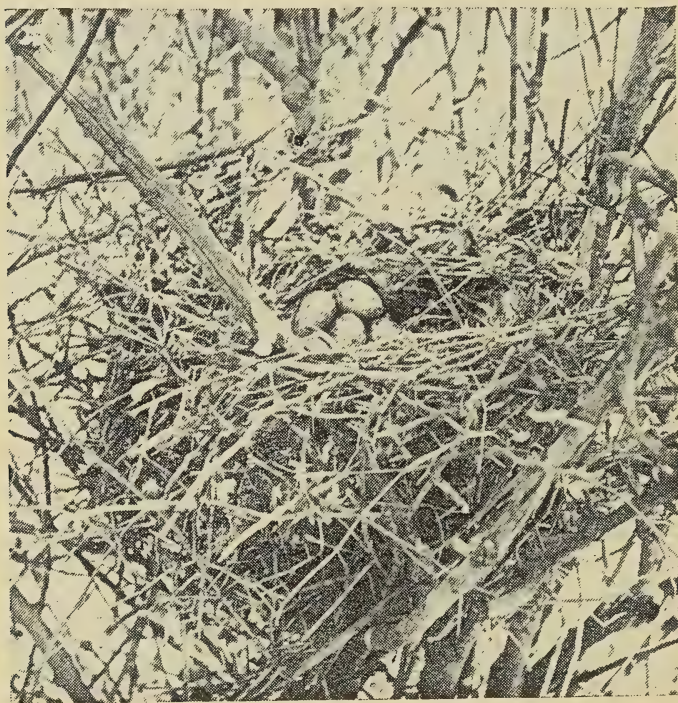


Fig. 44. Nest and Eggs of Crow. One-sixth natural size.

leaving desolation, and often ruin, in its path. One who has not experienced it cannot imagine the feeling of utter gloom wrought by such a visitation. Nothing will avail against it. All the scientific experts in the country may fire insecticides by the ton into such a mass without any

appreciable effect. It would be like Mrs. Partington trying to keep back the Atlantic Ocean with a mop. The fields of nature are, however, patrolled by a feathered police, whose function it is to keep this destructive insect in check, and if man does not interfere with these friendly watchmen locust plagues will be much fewer, and less destructive when they do occur, while the ravages of ordinary seasons will be kept at a minimum."

Nest.—Placed high or low in a tree, and composed of sticks and twigs and lined slightly with softer material. The open nest is a bulky one. Figured above is a nest photographed from a buggy in a swamp, the nest being in *Polygonum*.

Eggs.—Four or five to a clutch ; greenish appearance, with blackish-brown or brown spots and blotches. Length, 1.5 inches ; breadth, 1 inch.

RAVEN,

Corone australis, Gld.

Ko-rō'nē ās-tra'lis.

Korone, a raven ; *australis*, southern.

CORONE AUSTRALIS, mounted specimen, National Museum, Melbourne.

GEOGRAPHICAL DISTRIBUTION.—The whole of Australia and Tasmania.

KEY TO THE SPECIES.—Plumage uniform blue-black, bases of feathers dusky brown or black, not snow-white ; first primary longer than ordinary secondaries, but shorter than the innermost secondaries ; hallux very strong.

“THE Raven is undoubtedly the most commonly seen bird in nearly all Australia, excepting in the towns and suburbs. No homestead exists in the country which is not visited by crows ; indeed, hardly a traveller can camp for the night but his tent and fire are discovered by this keen-sighted bird. In fact, he may well be said to be the bird most knowing and most gifted with reasoning powers we have in the colonies, and we have some of great intellectual ability.” Such is what Mr. Price Fletcher tells me in speaking specially of Queensland travel. It is not so prominent a bird in south-west Australia, and appears there to be represented by the Crow. The Raven has a greater historical interest than the geese which saved the Roman capital. In size, “the largest raven is the greatest of the Passerine order.” According to leading anatomists it is probably the most highly developed of all birds. Mr. L. D. Cameron’s letter to me, dated 10th April, 1898, contains a valuable contribution to the knowledge of the sagacity of the Raven, and a non-sensitiveness about the gastric region. They seem to be able to swallow a thing and throw it up

again at pleasure. "The Messrs. Cheriton, who reside at Mossgiel, New South Wales, have a pet raven and a magpie. The raven would eat till it had enough, and then swallow more, retire, and disgorge it in some hiding-place. If, while it was hiding the food, the magpie was seen to be watching, it would immediately re-swallow it and go to some other place. It was noticed to do this when the magpie was in close attendance, and as the bird could find nowhere else to go, it retired under the dress of a lady and deposited the food there. On another day a flock of ravens were being invited to sup from a poisoned carcass. Having a secret watch put upon them, one or two swallowed pieces, and were noticed to quickly disgorge the strychnined morsels as if they knew something was amiss. Whether from taste, intuition, or previous experience they did this I cannot say." If the Raven is saprophytic it is also predaceous to a most useful extent, for it considerably reduces the cicadæ (so-called locusts), and thereby lessens their now well-known ravages at the roots of fruit trees. Both Crow and Raven (as we term our once so-called crows) give chase to the "seventeen-year-old insects," and having captured one while on the wing the bird settles upon a tree, holds it in one set of claws, sucks the juices from the trunk of the animal, and then drops it to the ground, still alive. This manner of living goes on at different parts of the colony during the spring season, and perhaps later. After a bush fire they feed very largely on insects, half-roasted quail, &c. In writing of the nesting of the Crow, Mr. Cameron sends me the following note from the interior of New South Wales:—"I found a nest of a raven in September, 1896, containing four young birds. It was on the ground, and at least two hundred yards from any timber. The nest was built just

as usual, but was flat on the ground. I have heard of other nests in our district on or very close to the ground, but have only seen one myself. The country referred to is most miserably timbered, and I do not believe two pairs of crows would agree to have their houses up the same stunted tree." With regard to further anomalies, I have seen clutches of eggs uniformly blue, and at other times to consist of one hard-sat egg. One specimen of a bird had a white head (South Australia). The sail area of the Raven in relation to its total weight is as large as that of any bird (observation of Mullenhoff). Because of the highly developed larynx it is placed by Dr. Sharpe among the singing birds. I venture to think a little voice-education would do much good in this case, and probably efface the heavy blot of prejudice against it.

Nest.—A bulky structure like that of the previous species.

Eggs.—Similar to those of the Crow, or perhaps a shade larger ; many are smaller.

BUTCHER-BIRD

(WHISTLING JACK, COLLARED CROW-SHRIKE),

Cracticus destructor, Temm.

Krak'ti-kus dē-struk'tor.

Kraktikos, noisy ; *destructor*, destroyer.

CRACTICUS DESTRUCTOR, Gould, "Birds of Australia," fol., vol. ii.,
pl. 52.

GEOGRAPHICAL DISTRIBUTION.—Areas 2, 3, 4, 6, 7, 9.

KEY TO THE SPECIES.—Throat white ; back grey ; flanks and sides of upper breast greyish white ; bill strong and well hooked ; culmen 1.25 to 1.5 inches in length ; nostrils longitudinal slits about the middle of the bill.

ALTOGETHER nine Butcher-birds are found in Australia. The present species and the other Victorian bird are the most common of the genus. *C. nigrigularis* occurs in the dry parts about Echuca and Swan Hill. The magpie is the nearest relation to the Butcher-bird, but one is much more insectivorous than the other. When named *Lanius* in the first meeting, it was well called so, as it is a true butcher in so far as it hangs up little birds (Silver-eyes, &c.) within forked branches and proceeds at once to dismember them, one at a time, to satisfy its appetite. At a later date the generic name was changed to *Cracticus* (noisy). This not only indicated one means of recognizing the bird, but in addition removed the delicate subject of bird-destroyer from it. That was well, because vermin and beetles form a very large portion of its food. In autumn the bird is garrulous, and has a musical and rich liquid note. That Butcher-birds are pugnacious is quite evident to me. I know of three that tried to fight their shadows in water and finally got drowned. I am sorry to say so, but

this bird is rather fond of stealing canaries when it is making its autumn tour of the outskirts of suburbs. In a few words, it pounces upon the cage, disconcerts the domesticated bird, and subsequently gets it out piecemeal, if not whole. I have the knowledge of at least a dozen cases, though I say so without prejudice because of its other good qualities.

Nest.—Cup-shaped, made of twigs and lined with grasses or rootlets. It is placed in any trees of the district, without a preference being shown.

Eggs.—Three or four to a sitting; the ground colour may be olive-green or tawny brown, spotted with dull chestnut and nondescript black. Length, 1.25 inches; breadth, 1 inch.

PART III.

BIRDS INSECTIVOROUS AND GRANIVOROUS (BENEFICIAL).

THERE are a number of birds that confine themselves neither to vegetable nor animal food. They serve the interests of the agriculturist and fruit-grower by eating numerous kinds of lowly-organized animals, and seeds of uncultivated plants, or seed not further needed. Such an example is the Quail. It checks the insects harboured in the fields, in addition to consuming a large proportion of seeds not needed for growing purposes. Birds such as the Pipit, Song-Lark, Grass-Warbler, and White-face, though seed-eating as well as insectivorous, play so important a part in the economy of agriculture that they have been placed in the leading head. It may be thought the Magpies should rank under this category, but they appear to me to be so genuinely insectivorous that I have placed them in the first part. The Mallee Fowl, because of its unique position in the bird fauna, and its rapidly approaching time of extinction in Victoria, is worthy of special notice. A further record of its habits, very different from those of other birds beyond mound-builders, should make interesting and instructive reading.

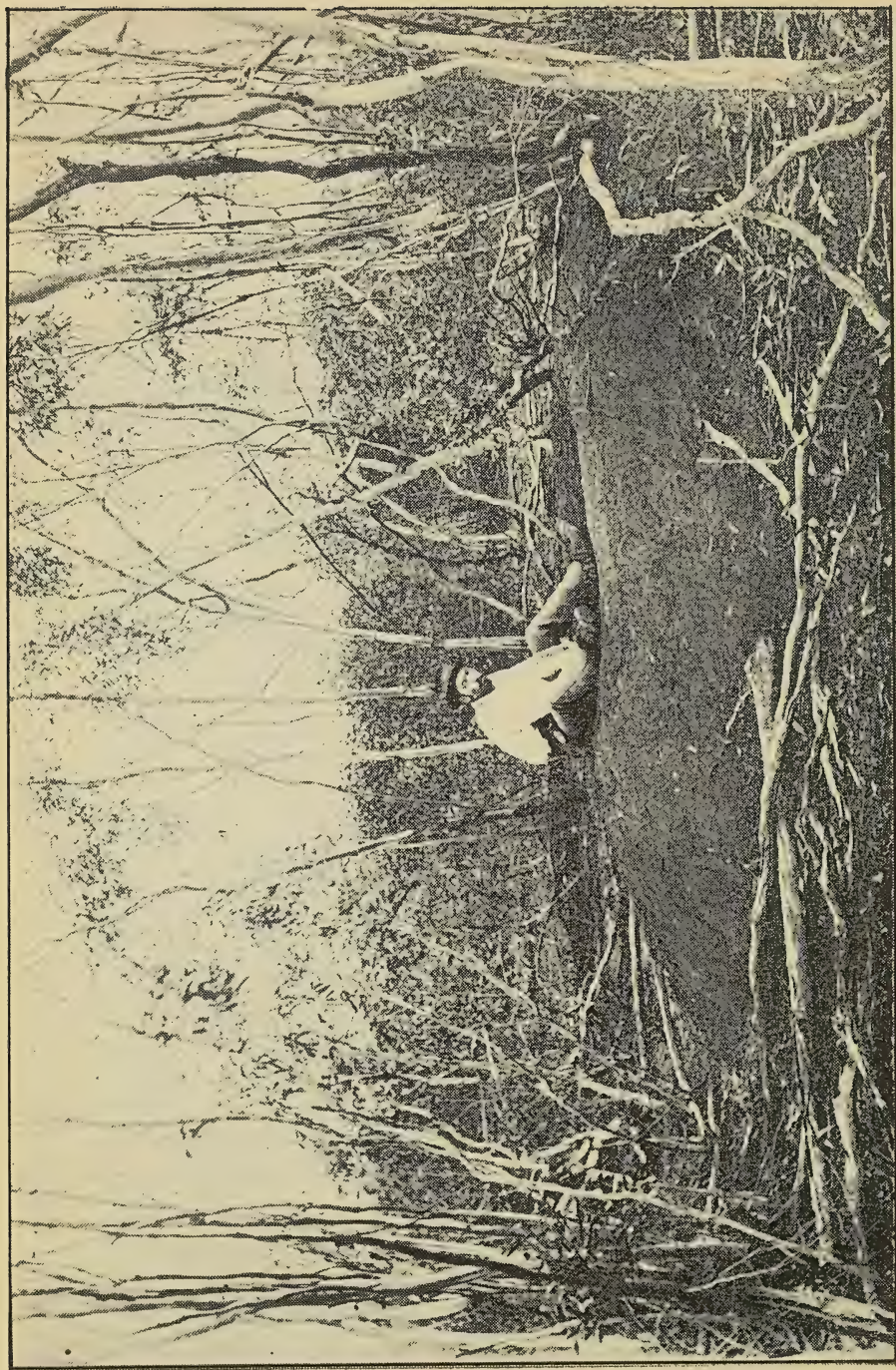


Fig. 45. Nest of Mallee Fowl. One-fortieth natural size.

MALLEE FOWL

(LOWAN, MALLEE PHEASANT),

Lipoa ocellata*, Gld.Lī-po'a os-el-ā'tä.**Lipein*, to leave; *ocellata*, little eyes.

LEIPOA OCELLATA, Gould, "Birds of Australia," fol., vol. v.,
pl. 78.

GEOGRAPHICAL DISTRIBUTION.—Areas 6, 7, 9.

KEY TO THE SPECIES.—General appearance black and grey, under surface partly scaled; top of head covered with feathers, forming a short, thick crest; nostrils elongated and oval; tail long, rounded, with 16 feathers; the long upper tail coverts reach to the end of the tail; a double row of large hexagonal plates down the front of the rather short tarsus.

WE have in Australia four species of mound-building birds, one of which is associated with the dry portion of our colony. Although to a large extent insectivorous, they are not strictly so. Judging by the country this species occupies, and its manner of living, it is one of the unique birds of the world, and a genus that has helped to make Australia zoologically famous. Like certain of the Reptilia, it arranges for artificial heat to incubate the eggs in a mound of sand and decomposing leaves. Such a hillock I measured and photographed, and found it to have a circumference of 48 feet. A good general history of the bird has been given in the *Ibis*, 1899, by Mr. W. H. D. Le Souëf, C.M.Z.S. The author well remarks:—"The bird has an extensive range in the southern half of Australia, being found in the north-western portion of Victoria, south-western portion of New South Wales, southern South Australia and Western Australia. It is, practically speaking, found wherever the mallee (a dwarf eucalyptus)

grows, and hence the name of the bird, as it is always associated with the mallee or similar scrub. The country where this tree grows is mostly sandy, and has a small rainfall, often being intersected with sandy ridges, popularly called pine-ridges, from the fact that the Murray pine generally grows on them.

“The male and female birds differ very little in markings, and their mottled black-and-grey colour harmonizes wonderfully with their surroundings. As they are shy and solitary, they are rarely seen, but specimens are sometimes obtained by patient watching near their nesting-mound. They occasionally utter a low, soft note, and their gait, when undisturbed, is a slow walk, although they can run fast if necessary. Their food consists of insects, berries, and the buds of a small shrub. They go to roost in trees when it is almost dark.

“The nesting-mound of these birds is generally situated close to some pine trees, or with thick scrub near or round it, and rarely without cover being near. When the scrub has been cut down round their old nesting-place they leave it and form another, but they prefer to make up their old mounds if possible, and the same places are often used year after year. When the birds have selected a site, they scrape out a slight hollow in the ground, from 6 to 8 inches deep in the centre and about 2 feet wide. Next they scrape up leaves, bits of bark, twigs, and other vegetation that may be lying about, and put enough on, not only to fill the depression, but to make a small mound of it, about 8 inches or more above the level of the surrounding ground. They then form a hollow in the centre of the vegetation about 1 foot wide and 6 inches or more deep, this being the egg-chamber; after which they scrape sand all round the nest and leave it until rain comes and well wets the

vegetation. The sand is then spread well over the mound to a depth of about 6 inches ; and after a few days, when the vegetation has heated, the mound is ready for eggs. The nest is generally made in July or August, and the first eggs are laid towards the end of September, but the absence of the necessary rain sometimes makes it later. Both birds assist in making the mound. The sand is scraped together with both the feet and the wings, the latter being used especially when getting the sand well up on the mound, which, when finished, often measures at the base 12 feet in diameter and in the centre from 2 to 4 feet high, and as the sand is generally dry, and runs freely, it is no easy matter for the birds to heap it up as they do. The various measurements given are about the average, as they differ more or less in every mound. The nest being ready for eggs, the hen bird scrapes out most of the sand from the egg-cavity, and leaving about two inches of it at the bottom, she then lays her egg, and holding it upright with one foot, with the small end downwards, she scrapes the sand round it with the other foot until it can stand alone. The bird has to lean well back to enable her to use both her feet. She then covers the whole with sand. The egg-cavity has to be scraped out and refilled every time an egg is laid, giving much work to the parent birds. The eggs are generally placed at the outer edge of the chamber, and one often in the centre. The first eggs are covered up with about two inches of sand over them, and a second tier commenced, each egg being laid opposite the interspaces of the lower lot. There are generally three tiers, with from three to five eggs in each, and a full clutch is about 14. I have always found the temperature of the egg-cavity to be from 95° to 96° Fahr. The eggs are laid at daybreak on every third

day, and incubation takes a little over five weeks. As incubation starts as soon as the egg is laid, the young ones are ready to hatch at different times. The eggs are usually of a delicate pink colour, especially when first laid, but the pink colouring matter easily comes off, especially after the egg has been taken out of the nest for some little time, and leaves the white under surface exposed ; occasionally I have found all the eggs in one mound pure white. The shell is very fragile, and one reason why the eggs are placed on end is evidently to sustain the weight of sand with which they are covered ; the sand round the eggs is generally slightly damp. Sometimes, when the parent bird is opening up the mound, she scratches a hole in the top of one of the eggs ; the sand then gets in, and, mixing with the contents, forms, when dry, a compact sandy mass, completely filling the shell. On one occasion I found five such eggs in one mound.

“There has been much discussion as to whether the young birds can make their own way out of the soil unaided by their parents. In order to settle it I covered in with wire netting a nest with several eggs in it, so that the parents could not open it up, and found all the chickens, when they came to maturity, dead in their shells. Then, again, on taking the eggs from a nest you often find chickens in their eggs which are ready to hatch, especially in the lower tier ; so much so that, when opening the egg, you have to hold the young bird firmly to prevent it escaping and running away. Then, on other occasions, you find chickens near the surface under the sand, apparently working their way out unaided. The old birds open up the nest to a certain extent daily at daybreak, and it is probable that any chickens that may be ready to come out, especially in the lower tiers, do so then. Moving the sand also prevents it from becoming set. But the chickens that hatch from

the eggs of the top tier, the sand there not being set so tightly, and being drier and running more freely, are able to force their own way out, and, judging from the experiments I have made, I should say this was usually the case. On opening up the nest that had been wired in I found that the sand had set rather tight, especially where the eggs were, and this I should say fully accounted for the young birds being unable to come out.

“When the mound is opened up during the day and eggs abstracted, the parent birds repair the mound shortly after the intruder has gone away, showing that either one or other of the birds generally remains in the neighbourhood.

“When the young are hatched they are well able to take care of themselves, being strong and well developed, and their wing feathers sufficiently formed to enable them to fly a short distance ; but they trust almost entirely to their running and hiding to escape danger, and to catch a newly-hatched young one in the scrub is no easy matter. The parent birds seem to take very little notice of their young, which lead an independent existence from their birth.”

Because of the peculiar habit the adults have of leaving the nest, the generic name *Lipoa* has been applied. The “little eyes” most likely refers to the plumage marks, though they are not very definite.

The judgment of my companion, Mr. Arthur B. Lord, in making an exact photographic exposure while I arranged other matters, has produced an excellent picture of the nest.

Nest.—A large mass of sand and leaves, with a diameter of 13 feet and a height of 3 feet, approximately.

Eggs.—Six to fifteen in a mound ; colour delicate pink to brick-red. Length, 3.5 inches ; breadth, 2.25 inches.

STUBBLE QUAIL,

***Coturnix pectoralis*, Gld.**

Co-tur'niks pek-tō-rā'lis.

Coturnix, a quail ; *pectus*, the breast ; *alis*, pertaining to.

COTURNIX PECTORALIS, Gould, "Birds of Australia," fol., vol. v.,
pl. 88.

GEOGRAPHICAL DISTRIBUTION.—Areas 2, 3, 4, 5, 6, 7.

KEY TO THE SPECIES.—Outer web of primaries uniform brown, not barred and marked with buff.

Male—Throat dull brick colour.

Female—Black bands on the feathers of the breast not confluent in the median line, but separated by a buff isthmus.

THE Australian Quails are divided into two orders—one with each member having a hind toe, the other with each member not having a hind toe (an exception, *i.e.*, Plain Wanderer). In the first order we have the Stubble, Brown, and King Quails ; in the second, seven Hemipodes and the Wanderer named. In a comparison with the quails of the world, it appears we have only one true quail. However, for our economic purposes the Button Quails (*Hemipodii*) are sufficiently good.

The Stubble or Pectoral Quail, averaging $4\frac{1}{2}$ ozs., is the largest of our so-called quails, while the King or Chestnut-bellied Quail is the smallest. So small is the latter that the total weight of a female weighed in the Government Entomologist's office was found to be less than $1\frac{1}{4}$ ozs.

The Stubble and Brown species very often occupy the same paddocks in open grassed country, while the King species keeps more to scrub lands. The food is principally seed and insects.

With the ending of the "close season" for shooting game,

most sportsmen go abroad to shoot for a day or more. One of my acquaintances, with two of his friends, accompanied by their best dogs, recently shot 728 birds in three days ; while about 1890, in the Western District, another much stronger party, with 8 guns, shot 900 birds. The ruin of young birds upon the field after such a time is appalling, and I consider it is iniquitous to have such a state of affairs as may be observed by anyone accompanying a party of this nature. Some shooters are honourable, and

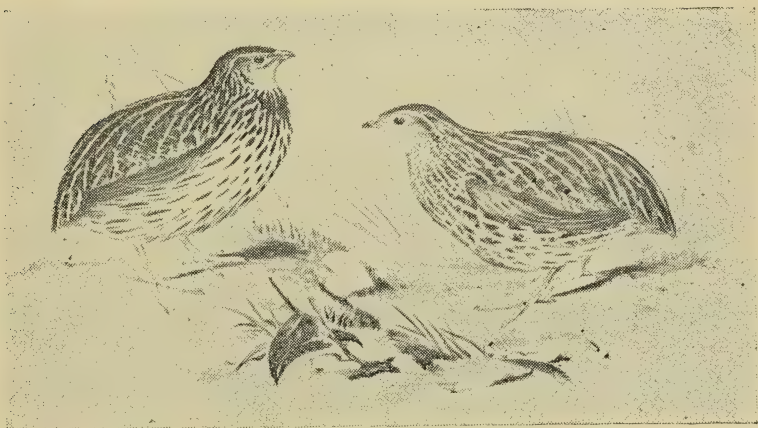


Fig. 46. Stubble Quail, male and female. One-fourth natural size.

allow poor fliers (young) to pass ; others are thoughtless. By the shooting of quail in southern Victoria on the 1st of March thousands of young chicks are left as orphans to die. This I judge partly by the female birds showing a bare breast that testifies to the late sitting upon her eggs. From a humane point of view sportsmen might well stay their hands a little longer time, and put their evidence in favour of prolonging the close season for another month. For farmers to allow the birds on their land to be shot

during April is courting trouble, because they are slowly killing the insectivorous "goose that lays the golden egg."

I have introduced the question here because it is fit and proper, as I see it.

The Stubble and Swamp Quails each lay a large number of eggs (8 to 10), and it is surprising how they will cover and so uniformly incubate them. In the *Victorian Naturalist*, 1899, Mr. G. A. Keartland describes the process of rearing a brood in the following way:—"The long feathers on the sides of the breast spread out at right angles from the body till the bird could hide an ordinary tea saucer. Although the male bird passed most of the time beside his mate, I do not think he took any part in the work of incubation, as he never stayed at the nest when the female was away. Early on the 3rd of February I saw broken egg-shells near the nest, and two small chocolate-coloured heads protruding from under the wings of the female, but the male was perched on the parrots' log, about four feet high. Next morning five chicks were seen following the mother. The male bird kept out of the way, preferring the company of the parrots to that of his wife and family. Unfortunately some of the chicks got into the water dish, and one was drowned; but the other four are thriving well, and have wing feathers over an inch long. The male bird is now in constant attendance on them, and when finely-chopped meat or green vegetables are thrown to them he picks up pieces and holds them in his bill until the young ones take them from him. They all scratch like common fowls, and are fed principally on canary seed." Green grass is a valuable help in their diet.

Nest.—A loosely made bowl of grass placed in a slight depression in corn or grass.

Eggs.—Seven to twelve; ground colour tawny, heavily marked with coarse blotches and spots of dense brown. Shape, swollen oval. The markings vary considerably in density and distribution; so much so that eggs in the collection of our fellow-naturalist, Mr. Charles French, jun., would scarcely be referable to the same species when compared with those in my collection. Length, 1.15 inches; breadth, 0.9 inch.

PAINTED QUAIL,

***Turnix varia*, Lath.**

Tur'niks vā'ri-a.

Turnix, a genus of Hemipodes (*i.e.*, one or more toes absent, half-footed), from *coturnix*, a quail; *varius*, spotted.

HEMIPODIUS VARIUS, Gould, "Birds of Australia," fol., vol. v., pl. 82.

GEOGRAPHICAL DISTRIBUTION.—Areas 2, 3, 4, 5, 6, 9.

KEY TO THE SPECIES.—*Adult male* has chest buff, irregularly spotted and marked with grey; no rufous nuchal collar, but otherwise the upper surface similar to that of adult female.

Adult female has chest grey, each feather with a pale buff or whitish shaft streak, becoming more or less spatulate towards the margin; feathers surrounding eye black, spotted with white; has a fairly defined bright rufous nuchal collar, each feather narrowly barred with rufous. Bill stouter than in male.

ALL the Turnices are Hemipodes (half-footed, *i.e.*, no hind toe), but all the Hemipodii are not Turnices. This is owing to the one exception (Plain Wanderer) having its foot whole-toed.

The Painted Quail is one of the button quails, which are strong in number and species on the eastern side of the

continent, but not so on the western. This species is said to be the only one in the west. A noticeable feature in the difference between button quails and true quails is that the former will lay four eggs as a rule for a sitting and the latter seven to ten.

The present species will associate in stony country slightly wooded and grassed, or in the heavily timbered lands of Western Gippsland. In habits it is very much like quail in general.

The Plain Wanderer has a buff collar on the neck, a hind toe, and lays three to four eggs. For these reasons it is not a turnix, yet not a true quail. The breeding season commences early in September and ends in February ; but it may vary considerably, as Mr. Coles, the Melbourne taxidermist, has just shown me an egg taken from the sitting bird on 7th June of this year.

Nest.—Similar to the preceding one. It is most often placed beneath a tuft of grass.

Eggs.—Four to the sitting ; shape, swollen oval ; pale buff ground, with minute spots of reddish-brown and brownish-grey all over it. Length, 1 inch ; breadth, 0·75 inch.

BUSH-LARK

(THICK-BILLED LARK),

Mirafra horsfieldi, Gld.

Mir-af'rä hôrs-field'i.

Mirus, wonderful ; *africus*, Africa ; Horsfield, a deceased naturalist.

MIRAFRA HORSFIELDII, Gould, "Birds of Australia," fol., vol. iii.,
pl. 77.

GEOGRAPHICAL DISTRIBUTION.—Areas 1, 2, 3, 4, 6, 7, 8, 9.

KEY TO THE SPECIES.—Blackish centres to the grey feathers of head and back ; bill very strong and short ; nostrils exposed, with a superior membrane ; planta tarsi (sides and back of tarsus) scutellated.

VERY few people realize that about half the birds they call common Ground-Larks are of this species. Both associate occasionally in the same field, and are then meadow birds. The Bush-Lark has a strong, finch-like bill, with a shorter body than the Pipit, and is just as widely distributed in Victoria. There are said to be two species of *Mirafra* in our continent, but it is not quite evident to me. Africa is the stronghold of the genus, and that is possibly why it got so named. Certainly it is the only sure species in Australia that belongs to the *Alaudidæ* (*Alauda*, a great songstress), or true Larks. Our Song-Larks come very close, and, after all has been said, it seems very much a matter according to the views of each systematizer. I have heard from this lark most delightful music in the early and late dark hours. Even in the "noon of night" it floats high in the moonlit air and gently breaks the quiet with its rich sweet voice. The song of the British Singing-Lark, now firmly introduced, is stronger.

Nest.—In general aspect much like that of the Pipit, and placed in a slight depression in a paddock.

Eggs.—Three eggs to a sitting; ground colour light brown, thickly sprinkled with fine spots of a darker brown. Length, 0.75 inch; breadth, 0.5 inch.

STRIPED GROUND-TIT

(LITTLE FIELD-WREN),

***Chthonicola sagittata*, Lath.**

Tho-nik'o-lä saj-e-ta'ta.

Chthon, earth; *colo*, I inhabit; *sagitta*, an arrow.

CHTHONICOLA MINIMA, Gould, "Birds of Australia," fol., vol. iii., pl. 72.

GEOGRAPHICAL DISTRIBUTION.—Areas 3, 4, 6.

KEY TO THE SPECIES.—Plumage olive-brown; throat and under surface very pale yellowish, with broad black arrow-like streaks, broader on breast and sides; under tail coverts uniform yellow; tail quite even, tarsus scutellated; first primary long, half length of whole wing.

My experience of the one species of this singular genus, also peculiar to Australia, has been just west of the Dandenong Ranges. Consequently, I found it to be a ground-living bird in fairly well-timbered land. It is classed with the Warblers. While at one time its voice is made up of two or three pleasant and gentle high-pitched notes, at others it is quite contradictory, being a single harsh and grating note, or a series of such notes when alarmed. Birds to the number of five or six associate, and act in many ways as the common tits, but not altogether different to the pipit. Like the latter it builds a nest upon the ground; but it is

a tit-like nest, placed where a pipit puts it. It feeds on insects as a tit does, but in addition it eats seeds, as a pipit very often does. So that you see, from one point of view, it could be called a lark-tit. But we must also consider the internal structure. So many points in this species are found

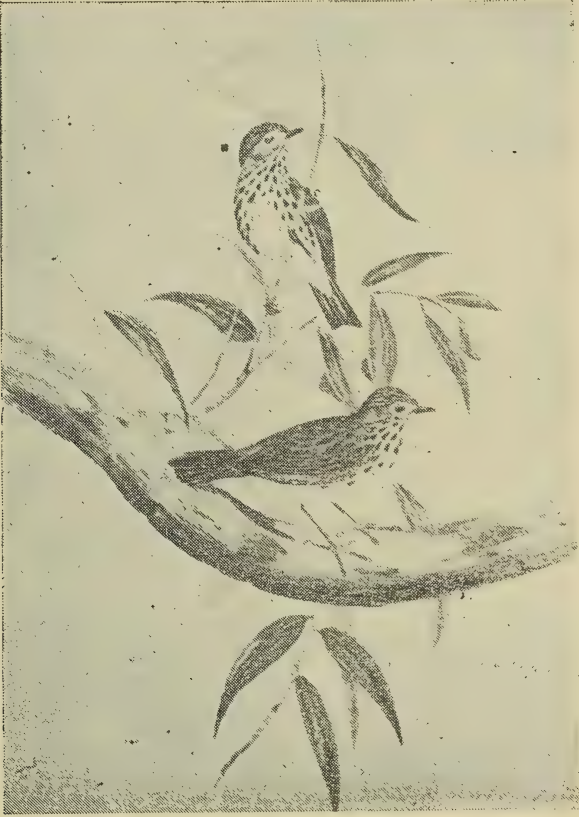


Fig. 47. Striped Ground-Tit. One-fourth natural size.

in wrens, tits, and pipits that it is universally called *Chthonicola sagittata* to save all trouble with a host of common names. A bird fond of the ground and boldly marked with black arrows is easily recognized. The young

assume the garb of the parents at an early date. How very carefully the nest is concealed is only known to those who have sought for it, and one might hunt for days without success unless the system necessary to the finding of ground birds' nests is adopted. Patience is the virtue ever to be commended. Under a small cluster of leaves of any native shrub, and with the upper portion closely mimicking its surroundings, a dome-shaped, side-entranced nest is placed upon, and partly in, the ground, and of material loosely put together, yet with symmetry. Dimensions, 7 x 4 x 4 inches. The eggs, which are laid each alternate day, are strangely overlaid with uniform dark chocolate, and nature has certainly provided ample protection to the bird through its habit and colours, to the nest in the manner of its position, and, as if these two were not sufficient, to the eggs in similarity of shade to their surroundings. Even a fox, that finds the *Sericornis*' nest and devours its contents, will need to use more than its powers of sight to be successful in its raid upon the young of the *Chthonicola*.

Nest.—Dome-shaped, side entrance; placed upon the ground in a slight depression, and covered with mosses to appear like its surroundings; grass, lined with feathers.

Eggs.—Three or four to a clutch; much swollen; bright chocolate appearance, no spots. Length, 0·75 inch; breadth, 0·6 inch.

GRASS-BIRD

(LITTLE GRASS-BIRD),

Megalurus gramineus, Gld.*Meg-a-lū'rus gra-min'e-us.**Megas*, great ; *oura*, tail ; *gramineus*, pertaining to the grass.SPHENCEACUS GRAMINEUS, Gould, "Birds of Australia," fol.,
vol. iii., pl. 36.

GEOGRAPHICAL DISTRIBUTION.—Areas 3, 4, 6, 7, 9.

KEY TO THE SPECIES.—General appearance brown ; fore-neck and lower throat more or less clearly streaked with dark brown ; secondaries black, edged with buff ; tail feathers graduated. Tail 2·5 inches, longer than wing. Total length, 5·75 inches.

THIS species, recognized by a few people as the Little Grass-bird, is not a well-known form. Although well dispersed in our continent it appears scanty in number because of its retiring disposition. Its habits are quite reserved, and its life is that of a recluse. Unless you go through the low scrub or rank grass, and actually force them to rise and fly a few yards beyond, you will not see any. I have waded into creeks and explored for many of their nests, yet I have never seen a bird except under those circumstances. In fact, it was years before I traced correctly the weird call of the little bird. Sportsmen who hunt swamps, and cow-lassies who bring in their kine from them hear the uncanny monotone of some little animal in the distance. Of course the lassies know all about it, but very few others do. To further demonstrate the quiet life of the species I have examined thousands of birds' eggs in boys' collections, and on one or two occasions only have I met with the eggs of this bird. I use the present opportunity to tell the boys it is a barbarous habit to take birds' eggs unless they are collect-

ing for the local museum. Such there should be in every hamlet, in order that one may know the animals and plants, useful or noxious, of the district.

The name "Stench-bird" has been applied because of an offensive smell it is said to emit. Personally, my nose has not detected any objectionable aroma, but game dogs quickly trace the birds by this means.

Nest.—Suspended in rushes growing in water; dome-like; entrance near top; deep; grasses, lined within by feathers.

Eggs.—Four to a sitting; ground colour flesh white, minutely freckled with red, varying in intensity in different sets. Length (much longer than broad), 0.75 inch; breadth, 0.5 inch.

REED-WARBLER,

Acrocephalus australis, Gld.

Ak-rō-sef' a-lus às-tra' lis.

Akros (a reference to the bill of the bird), a pointer; *kephalos*, a head; *australis*, southern.

ACROCEPHALUS AUSTRALIS, Gould, "Birds of Australia," fol., vol. iii., pl. 37.

GEOGRAPHICAL DISTRIBUTION.—Areas 2, 3, 4, 5, 6, 7.

KEY TO THE SPECIES.—General colour brown to olive-brown; bill large, depressed and broad at base, with moderately developed rictal bristles; third primary longest, the second equal to or longer than the sixth; wing 3 inches in length; culmen, 0.75 inch.

THE present bird is well dispersed over the sedgy lagoons and rivers of the eastern portion of the continent. The law of representation has placed a second species of the

genus upon the similar water places of the western colony. The Reed-Warbler and Grass-bird live peaceably together in the same reeds, though they are of opposite natures in many respects. The former whistles in the day, richly and harmoniously, just as it does in the night ; builds an open nest, lays plain eggs, and lives in water reeds. The latter

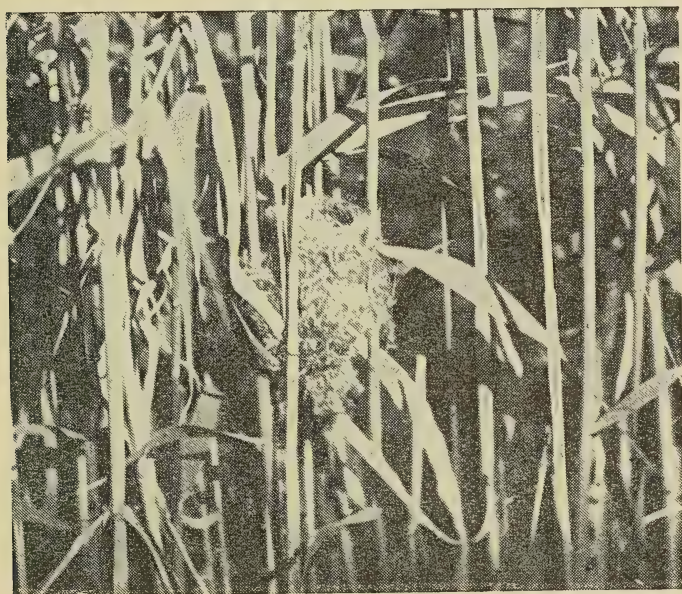


Fig. 48. Nest of Reed-Warbler. One-sixth natural size.

calls weirdly at night, and is quieter in the day, builds a side-entranced nest, lays brightly-coloured eggs, and lives at times in reeds (generally when breeding), and in other months in the dry, swampy bushes, not directly in the creek, but in the winter overflow. The food of the Reed-Warbler is largely insects. Holders of river frontages benefit by the incursions of the young and old birds in

search of provender. The young in the early phase assume the dress of the parents, which is not the rule with birds.

Nest.—Placed in reeds or suitable grasses in the water, attached to three or four stems; open, cup-shaped, deep, made of grasses and lined with finer grasses. The plate illustrates the shape and position.

Eggs.—Four to a clutch; ground colour tawny, thickly blotched and spotted with umber and dense brown, as well as markings of a pale olive, appearing as if beneath the surface.

PART IV.

BIRDS INSECTIVOROUS AND FRUGIVOROUS (MORE OR LESS USEFUL).

BIRDS, like other animals, are very much governed by their surroundings, and when one observer will record such a species as the common Red-wattle Bird as a pest, a second, in another district, will say it is a bird practically harmless to the orchardist. Even so, there are members of the feathered class that show a distinct partiality for native fruits. It is in this section that growers cannot expect to see resisted so strong a temptation given in the culture of choice fruits under the eaves of their natural haunts. If it is our duty, in the course of self-preservation, to treat the birds of this part more severely than the preceding ones mentioned here, I am strongly of opinion that a great slaughter is an undesirable disturbance of the balance of nature. What is wanted is a severe punishment administered on the spot where the fruit is growing. To shoot or poison birds away from the place of transgression is, in my opinion, little better than whipping a dog hours after it has committed and forgotten a wrong. The inclusion of honey-eaters amongst the birds known as insectivorous and frugivorous needs a word of explanation. When there is honey it is

preferred by this family before anything else ; when there is none, the next move is in favour of fruit ; and if this has gone, insects, large and small, are well hunted.

The Cuckoo-Shrikes and Silver-eyes are spoken of in very bad English all along the line of growers during portions of the summer months. Yet, if one presses intelligent growers to admit a knowledge of their habits during ten months of the year, you will find, as I have found, that when weighed in the balance the scale in the birds' favour goes down at once and heavily. No one person in this world gets all of any one way—neither the bird, the grower, nor the grown ; and it is a fact that while all parties appear to demand individual rights, one from the soil and the others from the garden, they are indispensable to each other in the working out of them. Australia has no bird that proves so disastrous to rural industries as the introduced sparrow. A law for its stringent suppression should be a satisfactory one. Everywhere, birds that keep in subjection untold millions of creatures during the year naturally expect a change of diet in three months of it. They have earned it, and get it if they can. Growers are not bound to give it, but for their own broad interests they should destroy them to as small a degree as is possible. Strong provision should be made to frighten the great bulk of the birds away from the gardens at “ ripening ” time, but at that time only.

SATIN BOWER-BIRD

(SATIN-BIRD),

Ptilonorhynchus violaceus, Vieill.*Til-ō-nō-ring'kus vī-ō-lā'shius.**Ptilon*, a downy feather ; *rhynchus*, bill ; *violaceus*, of a violet colour.PTILONORHYNCHUS HOLOSERICEUS, Gould, "Birds of Australia,"
fol., vol. iv., pl. 10.

GEOGRAPHICAL DISTRIBUTION.—Areas 2, 3, 4.

KEY TO THE SPECIES.—*Male*—Purplish-black ; bill higher than broad at nostrils ; nostrils entirely covered with silky feathers, dense and recurved. Total length, 12·5 inches.*Female*—Greyish-green on upper surface ; under surface lunated.

THE Bower-birds form a beautiful and interesting sub-family in our native fauna. It has helped to make the Australian region stand apart from all others in its animals, so foreign to anything else that they are truly the strangest novelties. A moment's glance at the members of this sub-family shows one a bird conspicuous with a lilac-pink neck, another with the richest of yellow and black feathers, a third handsomely spotted, and a fourth perfect in its shining satin-blue coat. Of such there are ten species within our continent, two of which are in Victoria, the rest broadly scattered in the hot, dry areas of the back country or in the damp heat of the scrubs of Queensland. They all have playgrounds, the trait which shows that a prominent individuality belongs to them. The Satin Bower-bird confines its habitat, as far as Victoria is concerned, to the humid land, and to the similar country of the northern colonies. In the cold months it associates in flocks by riversides, or near them if there is brush. It is a tationary and shy species, but, like most

birds, it will move about according to the food supply. Native fruits are largely eaten, and domesticated shrubs are haunted while any fruit remains upon them.

On the Bass River, in September, 1897, I was informed the birds came daily to feed upon the fruit of some very large pittosporum trees (30 feet high) and enjoyed it, while sparrows that had eaten it were found to be upon the ground beneath the foliage quite stupefied, and it is presumed by eating from the same trees. It takes many years for a male bird to get the glossy plumage, and this is possibly why one seldom sees more than two black males



Fig. 49. Head of Satin Bower-bird (nostrils hidden). Natural size.

in a flock of fifty greenish birds. The call heard by myself seemed to come from a depth in the throat, and was like the distant roll of machinery. One can hear this from the birds in the Zoological Gardens. The nest is placed high in the trees, and the bower, a playground, is placed upon the earth. The sexes meet, sport their finery, and have a delight in collecting the brightly-coloured objects of the country in their environment. They gather sticks and twigs, and interweave them so that an appearance is made just like one long half of a thin 2-foot drain pipe, but upon a firmer base. At each end they loosely place brightly-

coloured berries, pieces of broken glass, white bones, and whatever bright objects they can find upon the way. Through these decorated runs, which are well hidden generally, they walk backwards and forwards, playing and gambolling as it pleases them. My correspondent at Heytesbury has a tame male bird which he considers a weather prophet. Mr. Graham says:—"Twenty-four hours prior to rain or a change 'Jack' shows an agitation that is painful to look at. When clearing for fine weather, and about as quickly as the barometer gives the information, he is all serene. 'Jack' is fond of small and large grubs, for, when I let him out some three months ago, my garden was badly infested with white slugs. The slimy pest soon disappeared. Jack introduced a friend of his kind to the garden, but it had bad manners, because, no sooner had it arrived when it must start mischief among the fruit buds." From this I gather that Bower-birds in a garden are useful if a wing of each is cut.

The Greek word, meaning "feathered bill," refers to the nostrils being feathered, while the nostrils of the following species are bare. The woodcuts show the difference.

Nest.—Open, and placed in a gum sapling or other tree ; made of twigs and lined with finer twigs, &c.

Eggs.—Two to a sitting ; long ovals ; rich cream, spotted or blotched and dotted with sienna-brown. Length, 1.75 inches ; breadth, 1.15 inches (A. J. North).

SPOTTED BOWER-BIRD,

***Chlamydodera maculata*, Gld.**

Klam-i-dod'e-rä mak-u-la'tä.

Chlamus, a mantle ; *dera*, neck ; *maculatus*, spotted.

CHLAMYDERA MACULATA, Gould, "Birds of Australia," fol., vol. iv., pl. 8.

GEOGRAPHICAL DISTRIBUTION.—Areas 2, 3, 6, 7, 9.

KEY TO THE SPECIES.—*Male*—Band of bright lilac feathers on nape ; upper surface mottled all over with reddish spots or bars at tips of feathers ; throat and sides of body with spots or bars of brown ; head rufous-brown, slightly varied with spots.

Female—No lilac band ; flanks barred with dusky ; throat light reddish or tawny, slightly varied with dusky-brown cross-bars and edges to feathers.

THE Spotted Bower-bird frequents the dry half of Victoria, while the Satin species keeps to the wet half. Both extend their distribution in a northerly direction, each keeping to the class of country loved by it, and which present very different faunal and floral aspects. I find this species very shy, though, if disturbed when playing in its bower (the so-called baby cradle of the aborigines), it will fly rapidly from tree to tree, making a great fuss with its hard, scolding notes. The bower, as with that of the other species, is the most wonderful piece of bird architecture known, and it has assumed the highest standard of perfection in that of the *Amblyornis* of New Guinea. One bower I found near Swan Hill was elegantly decorated with bright quandong fruits, pieces of broken bottles, and the bleached bones of small animals. It was built amongst myalls, being nicely hidden beneath overhanging branches. The length was about 2 feet and the height 10 inches,

slightly overlapping on the top. Every animal has some way of enjoying itself, and this is the one chosen by the Bower-birds, besides being one of the means employed in natural selection. Some people say this bird is the greatest pest we have if the garden be near the brake of scrub to which they mostly resort. Though it is a suspicious and extremely wary bird, it is a bold one, and will dash into a fruit tree that is "almost under your nose." At the same time it calls out in a very brave way, almost impudent, yet the slightest hostile movement will cause the bird to vanish like magic. I should think such

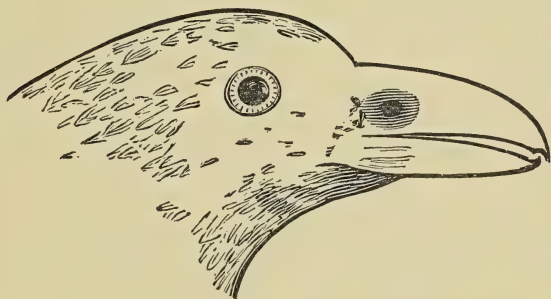


Fig. 50. Head of Spotted Bower-bird (nostrils exposed). Natural size.

a cute personage makes a mistake when visiting a fruit tree to use loud, defiant cries—sometimes its own notes, but often a bad imitation of a common bird in the neighbourhood.

Their food is partly composed of insects, but in the season of what may be growing in the garden, such as tomatoes and chilies—the latter, if swallowed whole, not being hot. In Queensland the small fruits of a bright colour, as guavas, are warred upon, which is reciprocated by the owners.

As with the previous species, the generic name, terrifying on first acquaintance, nicely explains the leading character of the bird when one observes the neck mantle (nape) is composed of bright lilac feathers.

Nest.—Similar to the preceding one.

Eggs.—Two to a sitting; much streaked and marked with blackish “hieroglyphics” over a pale greenish ground. Length of an ordinary specimen, 1.5 inches; breadth, 1 inch. It is a handsome egg, and marks a beauty spot in the magnificent collection of Australian birds’ eggs in the possession of Dr. Charles Ryan.

SOOTY CROW-SHRIKE

(BLACK MAGPIE),

***Strepera fuliginosa*, Gld.**

Strep'e-rä fu-li-jì-no'sä.

Strepere, to make a noise; *fuligo*, soot; *ous*, an affix denoting “presence,” fulness.

STREPERA FULIGINOSA, Gould, “Birds of Australia,” fol., vol. ii., pl. 43.

GEOGRAPHICAL DISTRIBUTION.—Areas 4, 5, 6.

KEY TO THE SPECIES.—General appearance sooty-black; wing quills with white tips nearly 1.5 inches broad; under tail coverts blackish; nostrils bare and placed high in the maxilla.

THE *Strepera* may be, in ordinary language, a Grey or a Black Magpie, and six species must answer to one or other of these names. Five are to be found in Victoria during all seasons of the year, while the sixth is a Tasmanian species. In Western Australia there is a sub-species of

our Grey Magpie. The word magpie applied here is not to be confused with the proper magpie (*Gymnorhina*), a thoroughly useful bird. My reason for drawing attention to this fact may be rightly guessed, because most growers



Fig. 51. Pied Crow-Shrike. One-fifth natural size.

consider the present bird very little less than a thief. Certainly the bird is sly, and enters a garden with at least one eye well open to see it gets there, and the other about the same to see it gets safely out before

trouble arises. Plenty of little birds do likewise, but whenever a large person or thing acts in an "underhand" way the act appears as large as a crime. Certainly it is a wrong. The general habit of this species is to fossick for food upon low-lying grounds, or in the vicinity of river courses, where it can find insects and their larvæ with the least amount of labour, as it prefers working upon the ground. All the members of the genus adopt this means to get a living, and they have become thoroughly expert in their ground movements. In form there is a strong resemblance to the Crow, but in habits there is a great difference. The Crow-Shrike is not a carrion-eater. Its relationship to the shrike is more remote than, and is held together through the medium of, the magpie (*Gymnorhina*). The *Strepera* lives very largely on insect food, but it also causes considerable annoyance to the orchardist. All Black and Grey Magpies are excellent eating, so, when killed, they should never be wasted. Dr. James Norton, writing in the *Agricultural Gazette* of New South Wales, 1897, remarks:—"The *Streperas* are generally classed among insectivorous birds, being, therefore, presumably friends of the fruit-grower, and no doubt they do eat a great many insects when they can get nothing more to their taste. About Springwood, at all events, they are more destructive to fruit than all the other birds put together. They are wholesale devourers of apples, pears, peaches, plums, quinces, grapes, figs, and every other kind of fruit, including even unripe date plums, which one would have thought sufficiently astringent to disgust any bird. They are terribly destructive to maize, the sheaths of which, covering the young cobs, they strip back to enable them to pick off the sweet, milky grasses just as they are ripening. They may be driven off by

shooting, but soon return if not continually watched. They are particularly destructive to grapes, which they appear to swallow whole, and, notwithstanding the protection by nets, they manage to get at the fruit by searching carefully for any small opening which may be accidentally left, and even sometimes cut their way through the net itself. If the bunches be bagged they will look for a small opening, and if present make it larger with their bills. I have known them to tear their way through the bag, if not of strong material, and then at leisure devour every berry. Large fruit is generally cut to pieces and devoured as it grows, but it is sometimes carried off after the manner of the common Crow to a neighbouring tree, probably impaled on the bird's beak if too large to carry in the ordinary way. It seems strange that the Satin Bower-bird, the Oriole (*Oriolus viridis*), and other fruit-eating birds should often accompany the Streperas in their marauding expeditions, arriving and departing with them, and even mimicking their notes." Continuing his notes, Dr. Norton remarks:—"It is only fair to say that, though the Strepera is so terribly destructive in my neighbourhood, yet in other places he does little or no mischief, probably confining himself to an insectivorous diet and adding the wild fruits, which he eats here when the garden fruit is gone, and among others that introduced nuisance, *Phytolacca* (ink plant)."

The plate illustrates the Pied Crow-Shrike (*S. graculina*, White), referred to above.

Nest.—Open and made of twigs, lined with finer twigs; placed in trees between forks.

Eggs.—Three or four to the sitting; pale ruddy-brown, marked liberally with darker brown. Length, 1.5 inches; breadth, 1 inch.

ORIOLE,

Oriolus viridis, Lath.

O-rī'o-lus vir'i-dis.

Aureolus, golden ; *viridus*, green.

ORIOIUS VIRIDIS, Gould, "Birds of Australia," fol., vol. iv., pl. 13.

GEOGRAPHICAL DISTRIBUTION.—Areas 3, 4.

KEY TO THE SPECIES.—Breast streaked ; abdomen white, broadly streaked with black ; upper surface olive, sometimes green ; lores feathered ; bill with a notch in the upper mandible ; nostrils placed well in front of the base of the bill and quite bare ; iris scarlet. Total length, 10 inches.

THE two certain species of Orioles are found only on the eastern coast of our continent ; one, the Northern species, keeps to the upper half, and the other, the present form, stays in the southern part. It is a fairly plentiful bird in the eastern half of Victoria, and in size it is a shade larger than the common Minah, or a little shorter than the Rosella. I am not certain whether or not it leaves southern Victoria during winter to get into warmer parts, though I have known it to arrive in the Box Hill-Bayswater district in advance of spring. Those of the upper part of New South Wales appear also to winter there. The voice of the Oriole is sometimes imitative of the Cuckoo-Shrike. It pitches the first note in a higher key than the Cuckoo-Shrike. Mr. Gould has had more experience of it than the writer, as he observes :—"The note of this Oriole is melodious and varied. It may often be seen perched on some shady tree, with its head thrown back, thus showing to perfection its mottled breast, and singing in a low tone imitative of the notes of many birds, including the Zosterops, and particularly the black or fruit-eating Magpie. While feeding, it frequently utters a harsh, guttural sort of squeak.

During the breeding season, which commences at the end of September and ends in January, it confines itself to a very monotonous although melodious cry, the first part of which is quickly repeated and ends in a lower note."

Dr. Ramsay, in the *Ibis*, 1893 volume, writes:—"During the winter months these birds may be found in flocks of from five to twenty in number, feeding upon various cultivated and wild fruits, and often in company with the fruit-eating Magpie (*Strepera*), the note of which they often imitate. They frequent nearly all the orchards and gardens about Sydney, especially if they contain any of the native olive or Moreton Bay fig trees in fruit, to which they are very partial. I have known them, though seemingly with great reluctance, eat the berries of the white cedar. Towards the beginning of September those near Sydney pair and seek for breeding-places, each couple selecting a distinct locality, where they remain during the whole of the season; even if the nest be taken, they will, like the *Grallina australis*, continue building near the same place until the season has expired." There is a divergence between the Orioles of the mainland and those of the Malay Archipelago, as noted by Mr. Wallace, and interesting as a case of protection. The two species of the islands unconsciously mimic the Leatherheads (*Philemon*) and thus lead birds of prey to believe they have to deal with the pugnacious Leatherhead instead of the harmless bird under notice.

Nest.—Open and suspended to a swaying branch; grasses and leaves lined internally with soft materials; diameter about 4 inches.

Eggs.—Three to a sitting generally; the ground colour is cream, over which are umber and brown spots, and faint lilac marks appearing as if beneath the surface. Length, 1.25 inches; breadth, 0.9 inch.

FRIAR-BIRD

(LEATHERHEAD, FOUR-O'CLOCK),

Philemon corniculatus, Lath.

Fîlê-mon kôr-nik-u-la'tus.

Philein, to love ; *monos*, single ; *corniculum*, a little horn.

TROPIDORHYNCHUS CORNICULATUS, Gould, "Birds of Australia," fol., vol. iv., pl. 58.

GEOGRAPHICAL DISTRIBUTION.—Areas 2, 3, 4, 6, 7.

KEY TO THE SPECIES.—Base of culmen with large hump ; whole crown, side of neck and head all round bare ; feathers of fore-neck and chest lanceolate in shape.

THIS is the common Leatherhead of Victoria. I have never seen the New South Wales species (*P. citreogularis*) come as far south as the Murray River, but I have no doubt it is numerous enough at times in the direction of Mildura. There are four species of Leatherheads on our continent.

Mr. Gould writes of this species :—"The Friar-bird, selecting the topmost dead branch of the most lofty tree whereon to perch and pour forth its garrulous and singular notes, attracts attention more by its loud and extraordinary call than by its appearance. From the fancied resemblance of its notes to those words it has obtained from the colonists the various names of 'Poor Soldier,' 'Pimlico,' 'Four-o'clock,' &c. Its bare head and neck have also suggested the names of 'Friar-bird,' 'Monk,' 'Leatherhead,' &c. The flight is undulating and powerful, and it may frequently be seen passing over the tops of the trees from one part of the forest to another. While among the branches it displays a more than ordinary number of singular positions, its curved and powerful claws enabling it to cling in

every variety of attitude, frequently hanging by one foot with its head downwards, &c. If seized when only wounded it inflicts with its sharp claws deep wounds on the hands of its captor."

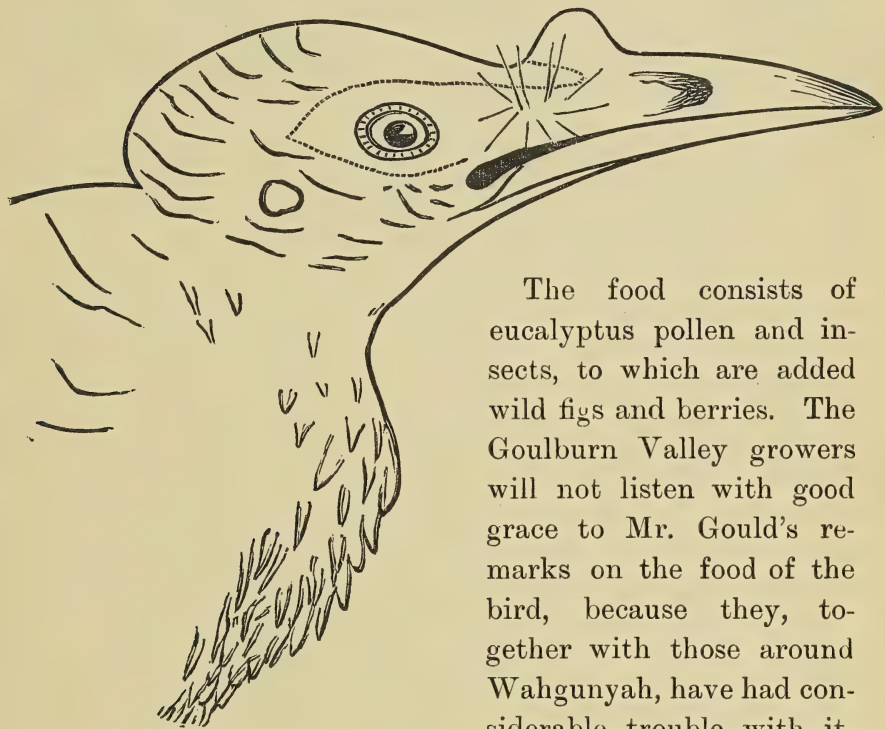


Fig. 52. Head of Friar-bird.
Natural size.

The food consists of eucalyptus pollen and insects, to which are added wild figs and berries. The Goulburn Valley growers will not listen with good grace to Mr. Gould's remarks on the food of the bird, because they, together with those around Wahgunyah, have had considerable trouble with it.

It seems to me people are justified in using language that threatens the birds

with a great fright one summer's day. It is a very aggravating bird just previous and subsequent to Christmas time.

Nest.—Suspended from a branch, with a part of the edge fixed in the fork of it. Grasses and bark make up the structure, with fine grasses within.

Eggs.—Three to a sitting ; long ; ground salmon colour, blotched with slaty-grey and pale chestnut. Length, 1.25 inches ; breadth, 0.8 inch.

YELLOW-FACED HONEY-EATER,

***Ptilotis chrysops*, Lath.**

Ti-lō'tis kri'sops.

Ptilon, a downy feather ; *ous*, *otos*, the ear ; *chrusos*, gold ; *ops*, face.

PTILOTI CHRYSOPS, Gould, "Birds of Australia," fol., vol. iv., pl. 45.

GEOGRAPHICAL DISTRIBUTION.—Areas 2, 3, 4, 6.

KEY TO THE SPECIES.—General appearance brown ; ear coverts yellow ; small white auricular patch ; black streak through eye ; cheeks black ; under parts with dull streaks ; upper parts earthy brown.

THE Leatherhead, the Lunulated (Black-headed), and this species are the Honey-eaters that make themselves a nuisance to growers of fruit. In the ornithology of this continent the honey-eating family is found to be the largest in number of species. That eminent ornithologist, Mr. John Gould, was very happy in claiming for the Meliphagidæ the place in the avi-fauna of Australia held by the eucalypts in the flora. Plant and animal are closely associated, for where a quantity of flowering gums are growing so surely will the Honey-eaters be represented by one or more species. When there are not any blossoms on certain trees the birds will seek others further afield, or, if necessary, will subsist on insect life until such time as nature provides the nectar-pots for a dual purpose. The question of what constitutes the family of Meliphagidæ is an open one, being rendered so by the varied opinions held by five leading systematists in London. The bone of contention is whether the Zosterops (Silver-eyes), of which

there are 88 species known, should or should not be included in the family. Dr. Gadow, in the "British Museum Catalogue of Birds," vol. ix., favours their entry. Of Honey-eaters with generally recognized definition there are some 150 known species confined to the Australian and New Zealand regions, though with scanty representation in the latter. With one exception they are altogether placed in these areas, and it is not so very surprising that this wanderer should get from Lombok to the island of Bali; rather the wonder is that the north-west boundary of geographical range should be so faithfully kept by the birds. If you hold the view that the Silver-eyes should form a part of the family, then the two regions named will lose the family as one peculiar to the areas, for it then starts its most western line of habitation in South Africa, working northward to China, and south from there to New Zealand, closely traversing the intermediate countries. If we include the Silver-eyes, of which there are six species in Australia, we find our continent, with Tasmania, totals seventy-five species. Thirty-seven of these are recorded as Victorian, and nearly all are decidedly useful birds, if not entirely insectivorous. That under present review is nearly always attracted by the working of a pioneer's lease, and, if satisfied that fruit is one of its products, decides to stay. To do the bird justice I might say its diet is strongly composed of insects in the winter, when most of the bad characters are, as we judge them, on their best behaviour.

Nest.—Cup-shaped and suspended; made of grasses and covered with mosses; position near the ground.

Eggs.—Two or three to a sitting. The colour varies considerably, but it is generally a pale salmon, with spots of chestnut-red and greyish-purple. Length, 0.75 inch; breadth, 0.5 inch.

RED-WATTLE BIRD

(WATTLE-BIRD),

Acanthochæra carunculata, Lath.

A-kan-tho-ke'rä kã-rung-ku-la'tä.

Akantha, a spine (a thorn); *chaera*, representing a genus of perching birds (Passeres); *caruncula*, a fleshy excrescence.

ANTHOCHÆRA CARUNCULATA, Gould, "Birds of Australia," fol., vol. iv., pl. 55.

GEOGRAPHICAL DISTRIBUTION.—Areas 3, 4, 6, 7, 9.

KEY TO THE SPECIES.—A long greyish bird, with longitudinal white marks upon the plumage; wattles $\frac{1}{2}$ -inch long and blood-red; tail graduated, as long as wing (about 6 inches); bill same length as head; nostrils longitudinal and operculated.

THE Red-wattle Bird, or Wattled Honey-eater, is a sale bird at our poulterers in and out of season. In Tasmania there is a close ally, and as its wattles are twice the length—*i.e.*, one inch, or half an inch longer than the Victorian species—the adult birds are quickly recognized irrespective of wattle colouration. There are two other so-called Wattle-birds, the Brush and the Lunulated. As they bear no wattles the differences in this respect are sound. The present species has a wide vocabulary, from an unpleasant guttural noise to one pleasant to a limited degree. When the young begin to call there is little to choose between that of the practised larynx and the one undergoing the tediousness of a lesson. The length of the youthful bird as it leaves the nest is nine inches, while that of the parent is fifteen, and the difference will give anyone critically inclined in the study of music an opportunity to further investigate. As the tail grows there are variations in the general plumage, being light brown in the young where the adult shows a tendency to white. On the 16th

May, 1896, Tunstall was the scene of a gathering of its forces for migration. Several hundreds, if not thousands, of birds were flying grouped overhead, doing what I believe to have been the gathering of their forces. One of my young friends, told off for special duty as a day watcher,



Fig. 53. Red-wattle Bird. One-fifth natural size.

saw these birds return in company at 3 p.m. after being away since 9 a.m. They made a short circuit, returned, and finally flew off, not to return for a season. However, all the birds of this species did not join the main body, as I saw, six weeks later, two on familiar ground, and appearing

to be in good health. In the same month, near Colac, a tremendously large flock, said to be a million of birds, was preparing to go to a warmer latitude for the winter. Surely the whole Victorian force had collected its units to move as a body on their migratory course.

Nest.—Open, loosely constructed of twigs, and lined internally with hair, fur, &c. ; placed near the ground and in a fork generally.

Eggs.—Three to a sitting ; ground colour salmon-buff, with chestnut markings upon it ; slaty-grey markings below the surface. Length, 1.25 inches ; breadth, 0.8 inch.

LUNULATED HONEY-EATER

(BLACK-HEADED HONEY-EATER),

Melithreptus lunulatus, Shaw.

Mel-i-threp'tus lun-u-la'tus.

Mel, honey ; *threpsis*, nourishment ; *lunula*, a little moon.

MELITHREPTUS LUNULATUS, Gould, "Birds of Australia," fol., vol. iv., pl. 72.

GEOGRAPHICAL DISTRIBUTION.—Areas 3, 4, 6.

KEY TO THE SPECIES.—Crown of head black ; white crescentic band across occiput ; under surface white ; naked space above eye scarlet ; wing, 2.75 inches to 3 inches in length ; bill shorter than rest of head.

THE Lunulated Honey-eater is a species that is commonly found in the south-east portion of the continent, broadly speaking from Adelaide to Brisbane, and the country east of that line. If not the most active of the family, there is little to choose between its speed in flight and the one greater. It is an acrobat, and falls from one bough to

another without any apparent change of form to do so, and if, while in the pendent position, it be easier to make a somersault in order to arrive safely a few inches below, it does so, and proceeds to the business of providing provender or engaging in battle without loss of time. The nests are neatly made and cup-formed. One I found to be almost completely lined with a layer of sheep's wool, and



Fig. 54. Lunulated Honey-eater and Nest. One-fifth natural size.

ornamented exteriorly by wool borrowed, stolen, or rightly taken from a house near the tree in which the nest was carefully hidden upon the higher twigs of the highest bough. A lofty position is not always chosen, but you would not be successful if you formed a rule to look low. Eucalypt trees seem to satisfy them, both as regards food

and position for the nest. Fruit, both native and introduced kinds, strongly tempts young and old alike, but it is a considerable time before they care to investigate trees bearing fruits they have not been accustomed to eat. This little bird carries a "moon" on its neck—one in the first quarter.

The Noisy Minah (*Manorhina garrula*) is another honey-eater that is not very high in the estimation of our people.

Nest.—Cup-shaped and suspended; made of grasses, with a few spider cocoons attached to the exterior. It is generally placed high in a eucalypt. The illustration above is typical of most honey-eaters' nests.

Eggs.—Two or three form the sitting; ground colour tawny, with reddish spots, which may form a zone. Length, 0·75 inch; breadth, 0·5 inch.

PART V.

BIRDS OFFENSIVE IN CERTAIN SEASONS TO FRUIT-GROWERS AND AGRICULTURISTS.

THERE appears to me to be a part of a certain section of the class Aves that has no direct value in the interest of the growers, while the smaller portion of it supplies an indirect help that is by no means a feeble one, though much underrated. I refer to the Parrot tribe. In it there are two divisions—(a) Brush* tongues, (b) Tongues without brushes.

The portion (b) has little to be said in its favour that calls for special mention, but that little may be noticed in the second of the subdivisions—(b I.), cockatoos which frequent the agricultural area, and are more or less hurtful (b II.), cockatoos which frequent the heavy timber adjacent to certain fruit-growing areas, and which are beneficial.

The part (a), of which certain Lories—the Musky (*Glossopsittacus concinnus*), Shaw; the Little (*G. pusillus*), Shaw; and the Purple-crowned (*G. porphyrocephalus*), Dietr.—form the backbone, is of much more interest to us. It is the portion that holds the great mass of parrots that visit us

* Dr. Garrod says that “it is only an excessive development of the papillæ which are always found on the lingual surface.”

annually, and cause so much annoyance and loss in the fruit crops ; but as a counterbalance it is the portion that does an infinite amount of good as scale and coccid eaters. In this well-wooded country such birds will be needed to patrol the forests and lightly timbered lands for a century to come.

The use of the brush tongue in section (*a*) is to gather nectar from the "honey-pots" of the eucalypti. When there are no blossoms the use of the brush tongues is partly discarded, but the birds are so well informed that they know scale insects contain a large amount of "honey-dew," and for the remainder of the season largely prey upon them. In this respect they differ from section (*b*), although not radically, as the Rosella has been known, near Melbourne, to clear many branches of the parasites.

In support of section (*a*), the greatest of native-bird enemies of the orchardist, generally speaking, I cannot do better than draw your attention to a paper by Mr. D. McAlpine, the Government Vegetable Pathologist, on the relations between the lory and the fungus of the citrus tree :—

"Mr. J. G. O. Tepper, of Adelaide, has shown me," writes Mr. McAlpine, "how the destruction of honey-eating birds may affect the sooty mould of citrus trees. It may be mentioned that it appears to have been practically absent when nature was less disorganized by man, and for a very simple reason. Being due to the sugary exudations of scale insects, &c., coating the trees, its abundance depends upon that of its producers, and this upon the reduction of the sugar-loving brush-tongued parrakeets, and other birds, which formerly abounded so greatly. These I have often observed busy in the early morning among the foliage of gums, &c., upon which the honey-dew appeared. Later in

the day the ants occupied these in overwhelming numbers, and drove the birds away, protecting the insects and cleaning the foliage.

“The complex relation seems to be in the following form :—

“1.—The scale or other insects are used indirectly to attract the ants by their sweet secretions.

“2.—The ants, like a standing army, protect the foliage against the attacks of leaf-eating animals.

“3.—The abundance of honey-eating birds is necessary to keep the scale or other insects within reasonable bounds.

“4.—The reduction of these birds by man tends to favour the increase of the scale insects and their produce.

“5.—The scale and other insects now get the upper hand, and the ants, protecting the insects, also favour their increase.

“6.—The consequence is superabundance of honey-dew, and this is taken advantage of by the germs of the fungus to spread and multiply.

“Thus the destruction of the honey-eating birds has brought about an increase of the honey-dew and of the ‘sooty mould’ which lives upon it, so that it is not only insectivorous birds which ought to be protected for the benefit of the grower.”

The conclusion of the whole matter appears to me to be that it is better to individually battle in the gardens rather than collectively to go abroad to war. Whatever means we use at home are necessary—in the first place to make them fear you, through simple fright, or in the second place to cause them to dread you by killing many of their number. Various means could be adopted, as with the Crow.

The Psittaci, so named by Ritgen in 1826 and generally

adopted, has its greatest diversity of types in the Australian region, but the largest numerical value in the neotropical (South America). Excluding the thorough globe-trotters (plover-like birds), parrots are reckoned as great an order of vagrants as any of the class, following as they do the flowering of the eucalypts from the low to higher latitudes. Of over 500 known species 63 are Australian. Of these 40 are Victorian. The following list will give an idea of the outline classification of the order, the first three being families (*idæ* termination), the last two sub-families (*inæ* termination). Excepting the Fig Parrakeets, which are Queensland birds, each has a representative within twenty miles of Melbourne, and I doubt not you are familiar with all:—1. *Cacatuidæ*—Black Cockatoos, 7 species; White to Rose-tinted Cockatoos, 7 species; Grey Cockatoos, 1 species. 2. *Loriidæ* (Brush-tongued Parrots) 7 species; *e.g.*, Musk Lorikeet. 3. *Cyclopsittacidæ* (Fig Parrakeets)—2 species; habitat in Queensland. Family *Psittacidæ*: 4. *Palæornithinæ* (“Merry-thought,” furcula, present)—6 species; *e.g.*, King Lory. 5. *Platycercinæ* (“Merry-thought” bone absent)—33 species of broad-tails; *e.g.*, Rosella.

MUSK LORIKEET

(GREEN 'KEET, MUSKY PARRAKEET),

Glossopsittacus concinnus, Shaw.

Glo-sop-sit'a-kus kon-sin'us.

Glossa, tongue ; *psittakos*, a parrot ; *concinnus*, compact.

TRICHOGLOSSUS CONCINNUS, Gould, "Birds of Australia," fol., vol. v., pl. 52.

GEOGRAPHICAL DISTRIBUTION.—Areas 2, 3, 4, 5, 6, 7.

KEY TO THE SPECIES.—General colour green ; no red on cheeks ; ear coverts red, like forehead ; bill black.

THE distribution of this species is complete along the eastern side of our continent, with Tasmania. My experience of the bird is in southern Victoria, where it is what I would call an overhead species, for we get our first impressions through the ear from high in the air, and looking up one sees a dashing flock of parrots screeching and quickly getting beyond the vision. Having a brush tongue it should hold an advantage above most others which have biting bills alone ; necessary in the attack upon hard fruits, &c. I seldom notice the birds between the middle of May and the end of August, but on the 19th of July, 1898, I heard one skyward. The 1897-98 summer was hot, the weather being very warm in April, particularly mild in winter, and with every indication at the end of August of an early summer, so that it stayed about the district. With a hot season and plenty of nectar blossoms, how it does enjoy life ! Having shot a specimen one day and held its head down, the "honey" streamed and dripped from its throat for nearly a minute. The eucalypts act as "foster-parents" in January. In the warmer portions of the colony it attacks, in great force, fruit trees, and leaves their fruit in a most unsatis-

factory state unless carefully guarded—a guard that is tedious and costly. The trouble is the birds are too tame to be driven from the trees by kindness. Its whereabouts in late summer is always known by the noise a flock makes. During the spring the pairs disassociate, each to rear a brood of young.



Fig. 55. Head of Musk Lorikeet (brush tongue). Natural size.

The Purple-crowned Lorikeet very much resembles it, but may readily be distinguished by the purple crown. It is not a common bird in southern Victoria, and only comes with specially hot seasons.

Nest.—In a hollow of a tree, and dust only is used upon which to place the eggs for incubation.

Eggs.—Four or five to a sitting ; white ; round. Length, 1 inch ; breadth, 0·75 inch.

LITTLE LORIKEET

(LITTLE GREEN 'KEET),

Glossopsittacus pusillus, Shaw.

Glo-sop-sit'a-kus pū-sil'us.

Glossa, tongue ; *psittakos*, a parrot ; *pusillus*, very small.

TRICHOGLOSSUS PUSILLUS, Gould, "Birds of Australia," fol., vol. v.,
pl. 54.

GEOGRAPHICAL DISTRIBUTION.—Areas 2, 3, 4, 5, 6, 7.

KEY TO THE SPECIES.—General colour green ; cheeks, forehead, and
chin all round the base of bill red.

THIS rapid flier is the most diminutive of the Australian parrots. It associates with the Musk Lorikeet in great numbers, and is easily heard in February along the southern coasts.

It breeds in the north among the secret places of aged timber and comes south with its family to see what can be secured in the open and to summer.

Like most of the parrots this tiny species is very fond of the gum trees, and spends much of its time among them.

Certain of the parrots are grass-loving, and spend nearly all the day gathering seeds upon the ground. Such are the *Psephotus* (8 species) and *Neophema* (7 species) in general, with the night parrakeets (*Pezoporus* and *Geopsittacus*) in particular. Of these latter there is only one species to each of the two genera.

Nest.—A cavity in a large tree is used, and the eggs are placed upon the decayed wood.

Eggs.—Four to a sitting ; white. Length, 0·7 inch breadth, 0·6 inch.

ROSELLA,

Platycercus eximius, Shaw.

Plat-i-ser'kus eg-zim'i-us.

Platus, broad ; *kerkos*, tail ; *eximius*, excellent.

PLATYCERCUS EXIMIUS, Gould, "Birds of Australia," fol., vol. v.,
pl. 27.

GEOGRAPHICAL DISTRIBUTION.—Areas 3, 4, 5, 6, 7.

KEY TO THE SPECIES.—Cheeks white ; head red ; feathers of back edged yellow and green, and having a scale-like appearance ; upper tail coverts green.

THIS species is almost too well known to need description. It is quite numerous at times, and very destructive among large fruit, as apples and pears. The trouble commences soon after the young begin to forage, and continues through the summer, or as long as any fruit remains upon the trees or ground. The hotter the day the more persistent the invaders, as if more moisture was necessary for them. During the winter and spring it gathers a living in the fields. The young birds appear in our markets as early as the middle of November. The old birds may use the same hollow for three consecutive seasons, but I do not recognize the same pair, even though it be the same. The nesting of this species is usually carried out in hollows of trees. However, near Mount Violet, south-west Victoria, I have been told that it is a common occurrence to find nests in rabbit-burrows, and occasionally in the decaying tops of fence posts, owing to the trees of a suitable nature being scarce.

Two short notes on this familiar bird may be interesting. The first is of a Rosella, now living, at Hawthorn, aged 21 months, that is able to speak 36 phrases, words of excla-

mation, and sentences of six words. Twenty-three of these I put on paper. It reminded me of Humboldt's story of the South American venerable parrot, which was the sole possessor of a literally dead language, the whole tribe of Indians having become extinct.

The second note is on a bird which lived for two years without any feathers. The owner, my friend Mr. W. J. Stephen, remarked to me that it seemed to be undergoing a severe moult when he got it, and it was still uncompleted when he gave it away two years later. With but a sprinkling of down and no feathers, it waxed strong and grew fat, and, despite the adverse circumstances, it was very active.

The Rosella is a species distinguished by its broad tail and peculiar beauty.

Nest.—Hollows of trees are used, and the eggs are placed merely upon the decayed wood.

Eggs.—Five, six, or seven to a sitting; white. Length, 1 inch; breadth, 0·8 inch.

WHITE COCKATOO

(SULPHUR-CRESTED COCKATOO),

Cacatua galerita, Lath.

Kak-a-tu'ä gal-ē-rī'tä.

Kakatua (Malay), imitation of the cry ; *galerum*, a helmet.

CACATUA GALERITA, Gould, "Birds of Australia," fol., vol. v., pl. 1.

GEOGRAPHICAL DISTRIBUTION.—The whole of the continent.

KEY TO THE SPECIES.—Body feathers white ; crest yellow, the feathers being narrow and recurved ; cere naked ; skin round the eyes white.

THERE are several cockatoos that are nearly white. This species is whiter than any other. The late Mr. John Gould, in his early wanderings in this colony, remarked upon the want of affection shown by farmers to this bird. He says:—"As may be readily imagined, this bird is not regarded with favour by the agriculturist, upon whose fields of newly sown grain and ripening maize it commits the greatest devastation ; it is consequently hunted and shot down wherever it is found, a circumstance which tends much to lessen its numbers. It evinces a decided preference for the open plains and cleared lands rather than for the dense brushes near the coast ; and, except when feeding or reposing on the trees after a repast, the presence of a flock, which sometimes amounts to thousands, is certain to be indicated by their screeching notes, the discordance of which may be easily conceived by those who have heard the peculiarly loud, piercing, grating scream of the bird in captivity, always remembering the immense increase of the din occasioned by the large numbers of birds emitting their harsh notes at the same moment."

In the heavy foliage and deep shadows the cockatoos

certainly sport "like spirits of light," but they seem to act like spirits of darkness in the wheat-field.

The food is seeds, grain, and bulbs. In captivity a cockatoo will eat a miscellaneous lot, and say a deal. Recently one in a Melbourne shop asked the caretaker for a drink. "Cocky" got it from a teapot, and said, "Thank you."

Nest.—A hollow at a high altitude in a large eucalypt is used, and the eggs hatch out on the dry dust.

Eggs.—Two for a sitting; white. Length, 1·5 inches; breadth, 1·2 inches.

But all cockatoos are not harmful. The black-plumaged portion have rather a good name, and concerning our Victorian common one I supply some remarks. It is the **Black Cockatoo**, *Calyptrorhynchus funereus*, Shaw (yellow patch on ear coverts and yellow band on tail).

This species is found in the mountainous parts of Victoria. Three or more great birds screeching in their heavy flight along a humid valley impresses one. It does so especially in the springtime, by the peculiar life it then leads, as one sits upon a hill-side above millions of wattle-blooms watching the slow flap of the great black bird within a few yards of your hidden form. It is so different an observation to watching the *Sericornis* (Scrub-Wren) beneath the jungle of ferns, musks, and small acacias below, hunting for its food. The staple diet of the Funeral species is the larvæ of the Goat Moth or similar kinds, according to their abundance, and I venture to say partiality is shown for them as by the Roman epicure, the Australian bushman, or the aborigine. The present writer has also found them "tasty." I have seen great

trees almost denuded of their bark by the attacks of these birds upon them in search for grubs. The absence of woodpeckers (Picidæ) in Australia is partly substituted by this bird, for in all other forest-bearing countries the woodpecker family of birds is the natural enemy of wood-eating larvæ. As orchards open out in the eastern part of our colony this bird will play its rôle very nicely if left alone, for the time may come when longicorn and other beetle larvæ will bring trouble to the trees introduced for profit. The tap-tap of the woodpecker is not so disastrous to the tree as the "bark wrencher" of the cockatoo. A *nom de plume* writer in an old paper speaks of a great mass of timber levelled in the area between the Latrobe and Tanjil Rivers, in order to oust a horde of hungry grubs. This happened in the vicinity of Pleasant, Icy, Camp, and Russell Creeks. The whole country beyond the Baw Baws seems at times to be blockaded by these birds. Great scars in the trees assume the V shape, some two inches deep, and young and old very quickly disfigure a part of a forest in search of the juicy grubs. The one-year-old bird is not nearly as expert as the warrior of maturer years, for while he thinks and hesitates, the latter knows his business, and proceeds to dislodge the enemy upon a slender indication. The general appearance of the nest and eggs is not unlike that of those of *C. galerita*.

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ERRATA.

Page 3, line 15.—For “Gymnorhinæ” read “Gymnorhininæ”

Page 31, line 5.—For “*sū'per-sil'i'ō'sus*” read “*sū-per-sil-i-ō'sus*.”

Page 88, line 5.—For “mind” read “chin.”

Page 142, line 17.—For “*a-sim-i'lis*” read “*as-sim'i-lis*.”

Page 156, line 4.—For “*topos*, place,” read “*pous* (*podos*), foot.”

GLOSSARY.

- AXILLA.—Arm-pit, junction of wing and body.
AXILLARIES.—Feathers growing from the arm-pit.
CERE.—Membrane at base of upper mandible.
COVERTS.—Feathers covering the bases of wing and tail quills.
CULMEN.—Highest middle lengthwise line of upper mandible.
DERTRUM.—Swollen tip of bill.
EMARGINATED.—Notched.
GAPE.—Line of commissure of mandible.
GENYS.—Under middle line of lower mandible from junction of prongs to tip.
HALLUX.—Hind toe.
HEXAGONAL.—Six-sided and six-angled.
HOOKLETS.—Innumerable small hooks in the barb of a feather.
INTERSCAPULUM.—Between shoulders.
LANCEOLATE.—Tapering.
LORE.—Space between eye and base of upper mandible.
MANDIBLES.—Upper and lower jaws with their covering.
MAXILLA.—Lateral margin of upper mandible.
NUCHAL.—Pertaining to region of neck.
OCCIPUT.—Hind head.
OPERCULUM.—A lid.
ORBITAL.—Region of eye.
PECTINATED.—Resembling the teeth of a comb.
PECTORAL.—Breast region.
PRIMARIES.—Main flight feathers growing on pinion or hand.
RECTRICES.—Tail quills.
RICTAL.—Pertaining to gape.
SCUTELLATE.—Having small plate-like surfaces.
SECONDARIES.—Flight feathers seated on the fore-arm (ulna).
SHAFT.—Main stem of feather.
SPATULATE.—Spoon-shaped.
SPECULUM.—Conspicuous bright spot.
SYNDACTYL.—Toes joined in part of length.
TARSUS.—Lower part of leg.
VERMICULATE.—To inlay ; worm-like tracks.
ZYGODACTYL.—Toes arranged in pairs, two in front and two behind.
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KEY

TO THE

INSECTIVOROUS BIRD CHART.

(With corresponding numbers to figures in the Egg Chart.)

Bird Chart Figure.	Page.	Egg Chart Figure.*	NAME OF SPECIES.	Bird Chart Figure.	Page.	Egg Chart Figure.*	NAME OF SPECIES.
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28	140	18	Coachwhip bird	56	48	—	Short billed Tree-Tit
				57	133	—	Orange-winged Tree-runner

* The third column vacancies are referred to in the text.

By the same Author.

A KEY TO THE BIRDS OF AUSTRALIA.

PRICE 5s.

EXTRACTS FROM PRESS NOTICES.

“NATURE,” 3rd May, 1900.

Were it nothing more than a synopsis of Australian birds, with just sufficient in the way of description to enable the different species to be easily recognized, this well-printed little “Key” would be to a great extent of merely local interest. But since the author has very wisely made geographical distribution its leading feature, the work appeals to a much wider circle of students than would otherwise have been the case.

In his “Report on the Zoology of the Horn Expedition,” Prof. Baldwin Spencer recently divided Australia into three zoological sub-regions—namely, (1) the Torresian, embracing the northern and eastern districts as far as South Queensland; (2) the Bassian, comprising eastern New South Wales, Victoria, and Tasmania; and (3) the Eyrean, including the remainder of the mainland. These sub-regions are further split up into “areas,” and the fact that bird-distribution accords with such a parcelling-out of the continent from other lines of evidence affords important testimony in support of Prof. Spencer’s views. It is noteworthy that the South Queensland area forms the headquarters of the Australian Passeres, a fact for which there must surely be some adequate physical reason, if only it could be discovered. The total number of species is 767, among which the black emu is believed to be extinct; and, so far as we have been able to verify them, the diagnoses of the various groups and species seem well adapted to their purpose. The work appears singularly free from errors and misprints, and ought to be in the hands of every Australian bird-lover.—R. L.

“VICTORIAN NATURALIST,” vol. xvi., No. 5,
September, 1899.

This work, a preliminary notice of which appeared in the last *Naturalist*, has now been issued from the press, and seems to fulfil the expectation formed by a perusal of the proof sheets. In addition to the points previously mentioned, the author introduces his work with a short preface of nearly four pages, which is almost entirely devoted to an explanation of the faunal sub-regions adopted, and a comparison of the genera and species occurring in these sub-regions. An index to the genera is followed by a vernacular index, a most useful addition, and a glossary of technical terms used, which, with the frontispiece, a diagrammatic representation of a quail, with the principal external features indicated, should enable any intelligent reader to recognize the distinguishing characters so tersely given, and render the work valuable alike to the ordinary naturalist as to the systematic ornithologist. On the whole Mr. Hall is to be congratulated on his book, which, being issued at the moderate price of five shillings, is within the reach of all. The printing of the work leaves nothing to be desired, and is abundant proof that scientific letter-press can be executed in Victoria.

W. J. Johnson





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